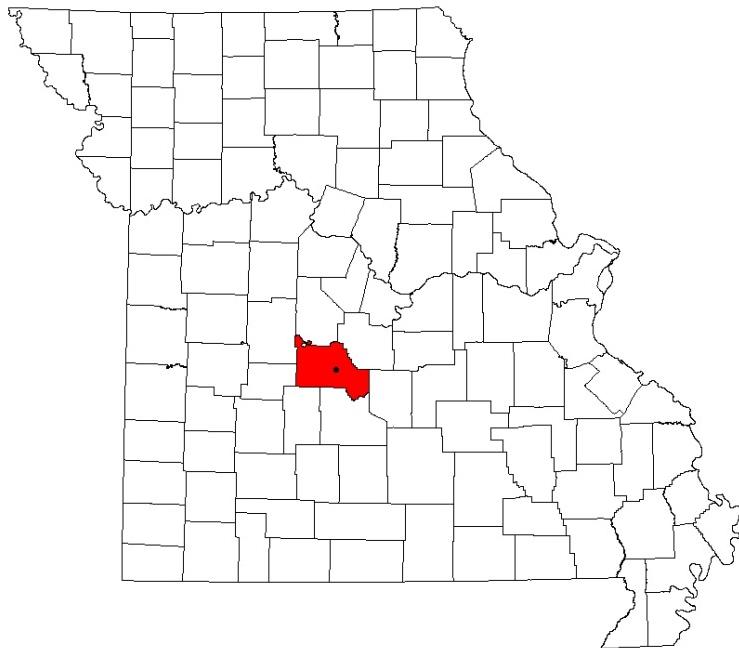


# **PRE-CERCLA SCREENING REPORT**

Dawson Metal Products Camdenton  
Facility #2 Site  
Camden County, Missouri

September 6, 2017



**MISSOURI**  
**DEPARTMENT OF**  
**NATURAL RESOURCES**

## **TABLE OF CONTENTS**

- I. Pre-CERCLA Screening Checklist/Decision Form
- II. Figures
  - Figure 1: Site Location Map
- III. Photographs
- IV. References

## **I. PRE-CERCLA SCREENING CHECKLIST/DECISION FORM**

## Attachment A: Pre-CERCLA Screening Checklist/Decision Form

This form is used in conjunction with a site map and any additional information required by the EPA Region to document completion of a Pre-CERCLA Screening (PCS). The form includes a decision on whether a site should be added to the Superfund program's active site inventory for further investigation. Select from available dropdown values for fields marked with an asterisk \*.

Region: 7 State/Territory: MO Tribe: \_\_\_\_\_ [Click here for the EPA Tribe Entity Mapping spreadsheet.](#) EPA ID No. (If Available) \_\_\_\_\_

Site Name: Dawson Metal Products Camdenton Facility #2  
Other Site Name(s): \_\_\_\_\_

Site Location: 1225 West U.S. Highway 54  
 3 Congressional District Camdenton (Street) Camden (County) MO (State / Terr) 65020 + (Zip+4)  
(City) (County) (State / Terr) (Zip+4)

If no street address is available: \_\_\_\_\_  
 (Township-Range) \_\_\_\_\_ (Section) \_\_\_\_\_

Checklist Preparer:  
 Amanda Branson (Name / Title) 09/06/2017 (Date)  
 Missouri Department of Natural Resources (MoDNR) (Organization) (573) 751-9021 (Phone)  
 1730 East Elm Street (Street) amanda.branson@dnr.mo.gov (Email)  
 Jefferson City (City) Cole (County) MO (State / Terr) 65101 + 4130 (Zip+4)

Site Contact Info/Mailing Address: Owner: Jack Dickerson, Dickerson Building LLC  
 12 Willow Creek Road, Camdenton, Mo 65020 (573) 346-2279

CERCLA 105d Petition for Preliminary Assessment? Yes \_\_\_\_\_ If Yes, Petition Date (mm/dd/yyyy): \_\_\_\_\_

RCRA Subtitle C Site Status: Is site in RCRAInfo? No \_\_\_\_\_ If Yes, RCRAInfo Handler ID #: \_\_\_\_\_

Ownership Type\*: Private Additional RCRAInfo ID #(s): \_\_\_\_\_

Site Type\*: Manufacturing/Processing/Maintenance State ID #(s): \_\_\_\_\_

Site Sub-Type\*: Chemicals & allied products Other ID #(s): \_\_\_\_\_

Federal Facility? No \_\_\_\_\_ Federal Facility Owner\*: (Make selection) \_\_\_\_\_

Formerly Used Defense Site (FUDS)? No \_\_\_\_\_ Federal Facility Operator\*: (Make selection) \_\_\_\_\_

Federal Facility Docket? No \_\_\_\_\_ If Yes, FF Docket Listing Date (mm/dd/yyyy): \_\_\_\_\_

Federal Facility Docket Reporting Mechanism\*: (Make selection) \_\_\_\_\_

Native American Interest? No \_\_\_\_\_ If Yes, list Tribe: \_\_\_\_\_

Additional Tribe (s): \_\_\_\_\_

## Attachment A: Pre-CERCLA Screening Checklist/Decision Form

### Site Description

Use this section to briefly describe site background and conditions if known or (easily) available, such as: operational history; physical setting and land use; site surface description, soils, geology and hydrogeology; source and waste characteristics; hazardous substances/contaminants of concern; historical releases, previous investigations and cleanup activities; previous regulatory actions, including permitting and enforcement actions; institutional controls; and community interest.

*Insert text here (if text exceeds size of text box, view all text on page 5).*

On June 16, 2017, the Missouri Department of Natural Resources (MoDNR), Hazardous Waste Program (HWP), Superfund Site Assessment Unit (SAU) was contacted by the United States Environmental Protection Agency (EPA) Region 7 regarding a phone call the Region received from Mrs. Carolyn Burns, a Camdenton citizen, concerned about trichloroethene (TCE) contamination and potential buried drum disposal in Camdenton (EPA, 2017). MoDNR staff contacted Mrs. Burns on June 20, 2017. Mrs. Burns explained that she worked for 28 years at the Dawson Metal Products facility located at 221 Sunset Drive in Camdenton. The facility began manufacturing air conditioning coils and feeder parts from aluminum and copper tubing in 1967. Historical manufacturing processes required vapor degreasing to remove oil and dirt from the various parts and assembled units. Over the operational history of the facility, several different solvents were used in the vapor degreasers, including TCE, 1,1,1-trichloroethane (1,1,1-TCA).

### Geospatial Information

Latitude: + 37.998918

Decimal Degree North (e.g., +38.859156)

Longitude: - 92.763290

Decimal Degree West (e.g., -77.036783)

Provide 4 significant digits at a minimum, more if your collection method generates them.

Except for certain territories in the Pacific Ocean, all sites in U.S. states and territories are located within the northern and western hemispheres and will have a positive latitude sign and negative longitude sign. The coordinate signs should be changed as necessary for sites in the southern and/or eastern hemispheres.

**Point Description:** Select the option below that best represents the site point for future reference and to distinguish it from any nearby sites.

- Geocoded (address-matched) Site Address
- Site Entrance (approximate center of curb-cut)
- Approximate Center of Site
- Other Distinguishing Site Feature (briefly describe below):

Point was placed at alleged TCE disposal area.

**Point Collection Method:** Check the method used to collect the coordinates above and enter the date of collection.

- Online Map Interpolation
- GPS (handheld, smartphone, other device or technology with accuracy range < 25 meters)
- GPS Other (accuracy range is ≥ 25 meters or unspecified)
- Address Matching: Urban
- Address Matching: Rural
- Other Method: \_\_\_\_\_

Collection Date (mm/dd/yyyy): 08/23/2017

### POINT-SELECTION CONSIDERATIONS

- Often the best point is a feature associated with the environmental release or that identifies the site visually.
- Use the curb cut of the entrance to the site if there is a clear primary entrance and it is a good identifier for the overall location.
- The approximate center of the site (a guess at the centroid) is useful for large-area sites or where there are no appropriate distinguishing features.
- Use the geocoded address if that is the only or best option available, but if possible use something more representative for sites larger than 50 acres.

## Attachment A: Pre-CERCLA Screening Checklist/Decision Form

Complete this checklist to help determine if a site should be added to the Superfund Active site inventory. See Section 3.6 of the PCS guidance for additional information.

	YES	NO	Unknown
1. An initial search for the site in EPA's Superfund active, archive and non-site inventories should be performed prior to starting a PCS. Is this a new site that does not already exist in these site inventories?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there evidence of an actual release or a potential to release?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are there possible targets that could be impacted by a release of contamination at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there documentation indicating that a target has been exposed to a hazardous substance released from the site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Is the release of a naturally occurring substance in its unaltered form, or is it altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Is the release from products which are part of the structure of, and result in exposure within, residential buildings or business or community structures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. If there has been a release into a public or private drinking water supply, is it due to deterioration of the system through ordinary use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Are the hazardous substances possibly released at the site, or is the release itself, excluded from being addressed under CERCLA?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Is the site being addressed under RCRA corrective action or by the Nuclear Regulatory Commission?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Is another federal, state, tribe or local government environmental cleanup program other than site assessment actively involved with the site (e.g., state voluntary cleanup program)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Is there sufficient documentation or evidence that demonstrates there is no likelihood of a significant release that could cause adverse environmental or human health impacts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Are there other site-specific situations or factors that warrant further CERCLA remedial/integrated assessment or response?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Attachment A: Pre-CERCLA Screening Checklist/Decision Form

**Preparer's Recommendation:**  Add site to the Superfund active site inventory.

Do not add site to the Superfund active site inventory.

Please explain recommendation below:

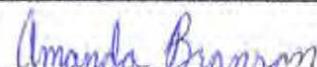
### PCS Summary and Decision Rationale

Use this section to summarize PCS findings and support the decision to add or not add the site to the Superfund active site inventory for further investigation. Information does not need to be specific but, where known, can include key factors such as source and waste characteristics (e.g., drums, contaminated soil); evidence of release or potential release; threatened targets (e.g., drinking water wells); key sampling results (if available); CERCLA eligibility; involvement of other cleanup programs; and other supporting factors.

*Insert text here (if text exceeds size of text box, view all text on page 6):*

Based on descriptions provided by former employees of the degreasing and disposal operations that took place at the DMPF #2 building from July 1972 through 1973, a substantial mass of TCE may have been released directly to the ground surface infiltrating to soil and groundwater at the site. Former Dawson employees indicate that one half of a 55-gallon drum of TCE was disposed of per shift, with two shifts running six days a week. It is therefore possible that as much as 17,000 gallons of waste TCE may have been released into the environment over the course of the year. The DMPF #2 building (with building additions) is currently used as a fishing tackle distribution facility with 21 employees. There is concern about potential intrusion of TCE vapor into the building as a result of the historic releases at the facility.

**Site Assessor:** Amanda Branson



Print Name/Signature

09/06/2017

09/06/2017

Date

### EPA Regional Review and Pre-CERCLA Screening Decision

**Add site to the Superfund active site inventory for completion of a:**

- Standard/full preliminary assessment (PA)
- Abbreviated preliminary assessment (APA)
- Combined preliminary assessment/site inspection (PA/SI)
- Integrated removal assessment and preliminary assessment
- Integrated removal assessment and combined PA/SI
- Other: \_\_\_\_\_

**Do not add site to the Superfund active site inventory. Site is:**

- Not a valid site or incident
- Being addressed by EPA's removal program
- Being addressed by a state cleanup program
- Being addressed by a tribal cleanup program
- Being addressed under the Resource Conservation and Recovery Act
- Being addressed by the Nuclear Regulatory Commission
- Other: \_\_\_\_\_

**EPA Regional  
Reviewer:** \_\_\_\_\_

Print Name/Signature

Date

**Site Description**

(All text as entered on page 2)

On June 16, 2017, the Missouri Department of Natural Resources (MoDNR), Hazardous Waste Program (HWP), Superfund Site Assessment Unit (SAU) was contacted by the United States Environmental Protection Agency (EPA) Region 7 regarding a phone call the Region received from Mrs. Carolyn Burns, a Camdenton citizen, concerned about trichloroethene (TCE) contamination and potential buried drum disposal in Camdenton (EPA, 2017). MoDNR staff contacted Mrs. Burns on June 20, 2017. Mrs. Burns explained that she worked for 28 years at the Dawson Metal Products facility located at 221 Sunset Drive in Camdenton. The facility began manufacturing air conditioning coils and feeder parts from aluminum and copper tubing in 1967. Historical manufacturing processes required vapor degreasing to remove oil and dirt from the various parts and assembled units. Over the operational history of the facility, several different solvents were used in the vapor degreasers, including TCE, 1,1,1-trichloroethane (1,1,1-TCA) and methylene chloride. Dawson Metal Products began operations in 1967 and was later bought by Sundstrand Tubular Products in 1973. Modine Heat Transfer purchased the Sundstrand Tubular Products business on August 24, 1990 and conducted operations at the 221 Sunset Drive facility until March 2012. The facility at 221 Sunset Drive is currently being investigated and remediated with oversight by MoDNR's Resource Conservation and Recovery Act (RCRA) Section (EPA ID #MOD062439351).

Mrs. Burns described a temporary change in location for company operations following a fire at the 221 Sunset Drive location in 1972. She stated that after the fire, a portion of the company's operations were moved to a building located at 1225 W U.S. Highway 54, known at the time as the Cox building (hereafter referred to as Dawson Metal Products Facility [DMPF] #2). The company operated at the DMPF #2 building for approximately one year until returning all operations to the Sunset Drive facility. Ms. Burns stated that workers at the DMPF #2 building were instructed to dispose of used TCE from the makeshift degreasing station by pouring it directly onto the ground surface outside a loading dock door (MoDNR, 2017A). Ms. Burns' statements have been corroborated by two other former employees, Mr. Jerry Rogers and Mr. James McGuire. Mr. Rogers worked the makeshift degreasing station in the DMPF #2 building and stated that it was standard practice to dispose of the waste TCE onto the ground outside the loading dock door when it was no longer useful in the degreasing process (MoDNR, 2017B).

According to the Camden County Assessor's Online GIS webpage, the property at 1225 W U.S. Highway 54 is 11 acres in size with a 78,000 square foot warehouse (DMPF #2 building). The property is bordered by a forested area on the northeast and northwest sides, Camden Mini Storage Company on the southwest side, and U.S. Highway 54 on the southeast side of the parcel. Site access is restricted on the south/southeastern portion of the property by a fence with a gate that is locked by staff after business hours. The property is currently owned by Dickerson Building, LLC and occupied by the Laker Fishing Tackle Company who rents the building from Dickerson (CMDN, 2017). Laker Fishing Tackle has been in operation at this location since 2002 and currently employs 21 people. The nearest residence is 300 feet to the west of the site. Surrounding land use includes commercial and residential properties.

**PCS Summary and Decision Rationale***(All text as entered on page 4)*

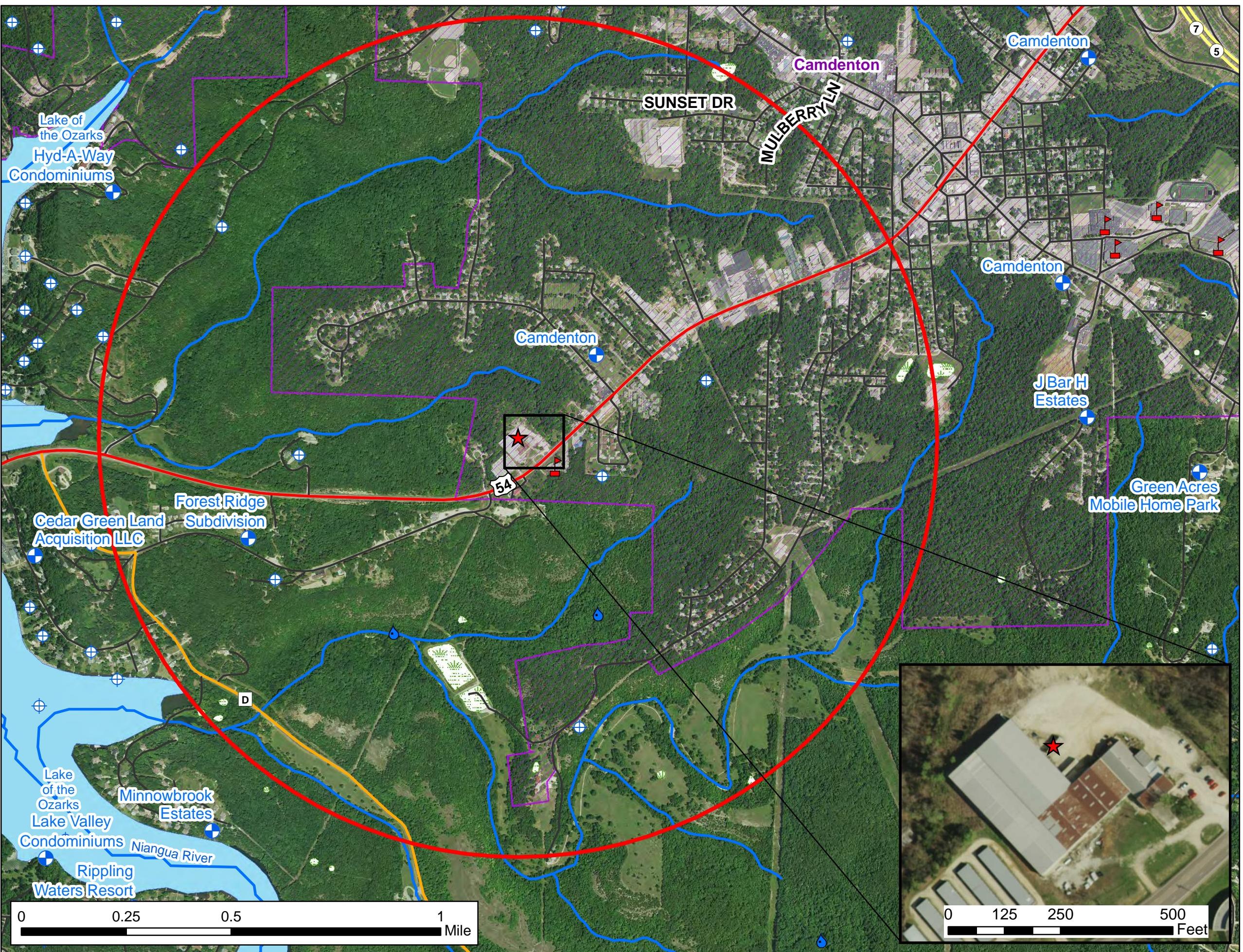
Based on descriptions provided by former employees of the degreasing and disposal operations that took place at the DMPF #2 building from July 1972 through 1973, a substantial mass of TCE may have been released directly to the ground surface infiltrating to soil and groundwater at the site. Former Dawson employees indicate that one half of a 55-gallon drum of TCE was disposed of per shift, with two shifts running six days a week. It is therefore possible that as much as 17,000 gallons of waste TCE may have been released into the environment over the course of the year. The DMPF #2 building (with building additions) is currently used as a fishing tackle distribution facility with 21 employees. There is concern about potential intrusion of TCE vapor into the building as a result of the historic releases at the facility.

There is limited data on the geology and hydrogeology at this specific site location. However, data available from the Modine Manufacturing site located at 221 Sunset Drive, approximately 0.75 miles to the north, indicates that bedrock in the region is comprised of Cambrian and Ordovician Age dolomite, cherty dolomite, and sandstone. Surface soil in the area has been classified as residual, alluvial, and colluvial. The Missouri Geological Survey (MGS) has reclassified the units in the region into easily recognizable characteristics as follows: alluvium, residuum loess (gentle slopes), residuum loess (steep slopes), and residuum colluvium (bedrock). According to MGS, there are no confining units below the site or in the region. Overlying loess allows for rapid infiltration (JEGI, 1992). TCE is a dense no-aqueous phase liquid (DNAPL). It is likely that TCE disposed onto the ground surface presents a risk to groundwater below the site.

MGS databases have a record of 9 public drinking water wells and 65 private drinking water wells within 1.5 miles of the DMPF #2 site. The City of Camdenton obtains drinking water from three public groundwater wells: North Rodeo Well #8, Blair Heights Well #4, and Hickory Well #7. The nearest public well is the Blair Heights well, drilled in 1974 to a total depth of 1,045 feet. The Blair Heights well has a steel casing to a depth of 400 feet and produces water at a rate of 100 gallons per minute. The Mulberry Well, which was a former public drinking water supply well in Camdenton, is located 600 feet southeast of the 221 Sunset Drive location and produces water at the rate of 600 gallons per minute. MoDNR detected TCE above the Maximum Contaminant Level (MCL) of 5 ug/L for the first time in the Mulberry Well in February 1998. The City of Camdenton took the Mulberry Well off line in February 1999. The Mulberry Well is no longer connected to the city's water supply system and is not used for drinking water. Contamination in the Mulberry Well is being investigated and remediated with state oversight under the site name Former Hulett Lagoon (EPA ID #MOSFN0703530).

Based on the available information, there is a threat of release of TCE into the environment. MoDNR recommends entry onto the Superfund Active Site Inventory and further assessment under CERCLA.

## **II. FIGURES**



**Figure 1: Site Location Map**  
**Dawson Metal Products**  
**Camdenton Facility #2 Site**  
**1225 W US Highway 54**  
**Camden County, Missouri**  
**September 2017**

### **III. PHOTOGRAPHS**



Photograph 1  
Dawson Metal Products  
Camdenton Facility #2 Site  
Camden County, MO  
Photo taken 8/23/17 by  
Amanda Branson,  
DEQ, HWP, SP

Front view of the Laker Fishing  
Tackle Facility.  
Photo taken towards the northwest.



Photograph 2  
Dawson Metal Products  
Camdenton Facility #2 Site  
Camden County, MO  
Photo taken 8/23/17 by  
Amanda Branson,  
DEQ, HWP, SP

Former location of the shipping dock  
door. The overhead door that was  
present in 1972 is no longer present,  
however, you can still see the  
location of the door tracks.  
Photo taken towards the northwest.



Photograph 3  
Dawson Metal Products  
Camdenton Facility #2 Site  
Camden County, MO  
Photo taken 8/23/17 by  
Amanda Branson,  
DEQ, HWP, SP

Zoomed in view of the former  
location of the shipping dock door.  
Photo taken towards the northwest.



Photograph 4

Dawson Metal Products  
Camdenton Facility #2 Site  
Camden County, MO  
Photo taken 8/23/17 by  
Amanda Branson,  
DEQ, HWP, SP

Suspected area of TCE disposal  
off of the shipping dock.  
Photo taken facing the northwest  
looking down and off the  
shipping dock.



Photograph 5

Dawson Metal Products  
Camdenton Facility #2 Site  
Camden County, MO  
Photo taken 8/23/17 by  
Amanda Branson,  
DEQ, HWP, SP

Suspected area of TCE disposal  
off of the shipping dock. Photo  
taken facing the northwest.

## **IV. REFERENCES**

## REFERENCES

- CMDN, 2017 Camden County, MO Online GIS. <https://camdengis.integritygis.com/H5/Index.html?viewer=camden> Retrieved August 2017.
- EPA, 2017 U.S. Environmental Protection Agency (EPA). Call Log from Carolyn Burns, Camdenton, Missouri Citizen to Neftali Santiago-Hernandez, EPA Receiver. June 16, 2017 at 16:21. 1 page.
- JEGI, 1992 Jacobs Engineering Group Inc. (JEGI). Alternative Remedial Contracts Strategy: Regions VI, VII & VIII- Remedial Planning Activities at Selected Uncontrolled Hazardous Substance Disposal Sites, U.S. EPA Contract No. 68-W8-0122, Volume 1. FINAL: Environmental Priorities Initiative/Preliminary Assessment, Modine Heat Transfer, Inc., (Formerly Sundstrand Tubular Products), Box 636 Sunset Drive, Camdenton, Camden County, Missouri. EPA ID No. MOD062439351. September 1992. 58 pages plus attachments.
- MoDNR, 2017A MoDNR. Brown, Keith, Environmental Specialist III, Site Assessment Unit (SAU), MoDNR. Telephone Record between Carolyn Burns, concerned citizen from Keith Brown, MoDNR, HWP, Superfund SAU Environmental Specialist III and Valerie Wilder, MoDNR, HWP, Superfund SAU Chief. SUBJECT: Citizen concerns regarding TCE contamination in Camdenton Area. June 20, 2017. 2 pages.
- MoDNR, 2017B MoDNR. Lyon, Travis, Environmental Specialist III, Site Assessment Unit (SAU), MoDNR. Telephone Record between Jerry Rogers, former Dawson/Sundstrand/Modine employee from MoDNR, HWP, Superfund SAU Environmental Specialists: Amanda Branson, Travis Lyon, Keith Brown and Valerie Wilder, MoDNR, HWP, Superfund SAU Chief. SUBJECT: Former Dawson/Sundstrand/Modine Employee's Concerns. July 21, 2017. 4 pages.
- MoDNR, 2017C MoDNR. Branson, Amanda, Environmental Specialist III, Site Assessment Unit (SAU), MoDNR. Telephone Record between James McGuire, former Dawson/Sundstrand/Modine employee from Amanda Branson, MoDNR, HWP, Superfund SAU Environmental Specialist III. SUBJECT: Former Dawson/Sundstrand/Modine Employee's Concerns. August 3, 2017. 2 pages.
- MoDNR, 2017D MoDNR interview with Jerry Rogers, former Dawson/Sundstrand/Modine employee. Site Sketch of the 1972 Dawson Metal Products operation at the 1225 W. U.S. 54 facility by Jerry Rogers. August 23, 2017. 1 page.

MoDNR, 2017E Google Earth aerial view of Laker Fishing Tackle facility highlighting area of suspected TCE contamination. 2017. 1 page.



## Call Log

Call Date: 2017/06/16 (YYYY/MM/DD)	Call Time: 16:21 (HH:MM)	Duty Officer: OSC R BROWN
Call Type: Incoming		
<strong>Receiver Information</strong>		
Name: Neftali Santiago-Hernandez		
<strong>Contact Information</strong>		
Name: Carolyn Burns		
Organization: Citizen		
Contact Info: (573) 346-1272		
Camdenton, Missouri		
<strong>Incident Information</strong>		
Incident Type: Other		
Incident Description: Citizen is concerned about TCE contamination and potential buried drum disposal in Camdenton.		
URL:	<a href="http://">http://</a>	
<strong>Notes</strong>		
Referred to Jamie Bernard-Drakey, EPA Region 7 Missouri Site Assessment Manager		

DataID: 5299[Return To List](#)





JACOBS ENGINEERING GROUP INC.

# ALTERNATIVE REMEDIAL CONTRACTS STRATEGY

## REGIONS VI, VII & VIII

Site: Medine Heat Transfer  
ID #: MUDOG 2439351  
Break: 1.5  
Other: \_\_\_\_\_  
9/92

REMEDIAL PLANNING ACTIVITIES  
AT  
SELECTED UNCONTROLLED HAZARDOUS  
SUBSTANCE DISPOSAL SITES  
U.S. EPA CONTRACT NO. 68-W8-0122

IN ASSOCIATION WITH,  
TERRACON CONSULTANTS EC, INC.  
McCLELLAND ENGINEERS, INC.

30025788



Superfund

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
ALTERNATIVE REMEDIAL CONTRACTING STRATEGY  
REGIONS VI, VII, VIII**

**VOLUME I**

**FINAL  
ENVIRONMENTAL PRIORITIES INITIATIVE/  
PRELIMINARY ASSESSMENT  
MODINE HEAT TRANSFER, INC.  
(FORMERLY SUNDSTRAND TUBULAR PRODUCTS)  
BOX 636 SUNSET DRIVE  
CAMDENTON, CAMDEN COUNTY, MISSOURI  
EPA ID NO. MOD062439351**

**U.S. EPA CONTRACT NO. 68-W8-0122  
U.S. EPA WORK ASSIGNMENT NO. 47-7JZZ  
U.S. EPA REGION VII**

**PREPARED BY**

**JACOBS ENGINEERING GROUP, INC.  
10901 WEST 84TH TERRACE, SUITE 210  
LENEXA, KANSAS 66214  
(913) 492-9218  
JACOBS PROJECT NUMBER 12-D247-22**

**SEPTEMBER 1992**

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
<b>EXECUTIVE SUMMARY</b>	<b>ES-1</b>
1.0 <b>INTRODUCTION</b>	1
1.1    Objective	1
1.2    Scope of Work	1
2.0 <b>SITE DESCRIPTION</b>	1
2.1    Site Location	1
2.2    Site Features	2
2.3    Ownership History	2
2.4    Nature of Operations	2
2.5    Permit and Regulatory History	5
3.0 <b>ENVIRONMENTAL SETTING</b>	6
3.1    Area Water Supply	6
3.2    Potential Surface Water Receptors	6
3.3    Regional Geology/Hydrogeology	8
3.4    Site Geology and Hydrogeology	9
3.5    Area Climatology and Meteorology	10
3.6    Critical Habitats and Endangered Species	10
3.7    Population/Census Information	
4.0 <b>VISUAL SITE INSPECTION</b>	10
4.1    Visual Site Inspection Participants	10
4.2    Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs)	11
<b>REFERENCES</b>	<b>57</b>

## FIGURES

- Figure 1**      Site Location Map
- Figure 2**      Surface Water Runoff Map
- Figure 3**      Historical Building Additions
- Figure 4**      Past and Present SWMU Location Map
- Figure 5**      Four-Mile Radius Map
- Figure 6**      15-Mile Surface Water Migration Pathway
- Figure 7**      Present TCA Wastestream
- Figure 8**      Historical Vapor Degreaser and Still Location Map

## **TABLES**

**Table 1 SWMU/AOC Identification Summary**

**Table 2 LAW Environmental Site Assessment Analytical Results Summary**

**Table 3 Wells Within 4-Mile Radius of Modine Heat Transfer, Inc.**

## **APPENDICES**

**Appendix A      1980 Part A Application, 1983 Revised Part A Application and RCRA Technical Review**

**Appendix B      1990 Part A Application**

**Appendix C      Closure Plans**

**Appendix D      Wastewater Discharge Permit City of Camdenton, Missouri**

**Appendix E      Environmental Site Assessment by LAW Environmental, November 1991**

**Appendix F      Well Logs**

**Appendix G      Photodocumentation**

**Appendix H      Analytical Results of Hulett Lagoon Sludge**

**Appendix I      Correspondence from the MDNR to Mayor Webster Regarding Hulett Lagoon Closure Options**

**Appendix J      Closure Plan Analytical Results**

**Appendix K      Present Waste Disposal Method**

## **EXECUTIVE SUMMARY**

A Visual Site Inspection (VSI) and a Preliminary Assessment (PA) were conducted by Jacobs Engineering Group Inc. (Jacobs), on behalf of the U.S. Environmental Protection Agency (EPA) Region VII, at Modine Heat Transfer, Inc. (MHT) on March 4, 1992. The Modine facility is on Sunset Drive in Camdenton, Missouri, in Camden County. MHT is a manufacturing facility that produces air conditioning coils and feeder parts from aluminum and copper tubing. The manufacturing process consists of aluminum and copper cutting and brazing, aluminum etching, and, previously, a limited amount of chromium electroplating.

The facility began production in 1967. During the history of the facility, the ownership has changed three times. Previous owners include Dawson Metal Products, Inc. (1967 to 1974) and Sundstrand Tubular Products (1974 to 1990). MHT is the current owner/operator. Various types of hazardous waste are generated during the manufacturing process including: 1,1,1-trichloroethane (TCA); paint waste; wastewater pretreatment sludge; solvents; and waste oil. Non-hazardous wastes generated by the facility include: paper; cardboard; scrap metal; and general refuse. All wastes are either drummed in 55-gallon barrels, stored in high-capacity storage tanks, shipped to recycling centers, processed by the pretreatment wastewater unit, and released to the city publically-owned treatment works (POTW), or stored for reclamation or disposal by contracted services. From 1967 until 1986, wastes were disposed through mudpits to the Hulett Lagoon, which was owned by the city of Camdenton. In 1986, a pretreatment wastewater system was placed on-line, which remains in service.

Thirty-four Solid Waste Management Units (SWMUs) and four Areas of Concern (AOCs) have been identified at this facility. The SWMUs and AOCs identified are:

<b>SWMU Number 1</b>	<b>Hulett Lagoon</b>
<b>SWMU Number 2</b>	<b>Mudpits</b>
<b>SWMU Number 3</b>	<b>Pretreatment Wastewater System/Filter Press</b>
<b>SWMU Number 4</b>	<b>Tank and Drum Storage Area Number 1</b>
<b>SWMU Number 5</b>	<b>Drum Storage Area Number 2</b>
<b>SWMU Number 6</b>	<b>Waste FIN Oil Storage Tank Number 1</b>
<b>SWMU Number 7</b>	<b>TCA Waste Storage Tank Number 6</b>
<b>SWMU Number 8</b>	<b>Copper Cleaning Line</b>
<b>SWMU Number 9</b>	<b>Copper Cleaning Line Scrubber</b>
<b>SWMU Number 10</b>	<b>Aluminum Cleaning Line</b>
<b>SWMU Number 11</b>	<b>Large Aluminum Brazing Furnace</b>
<b>SWMU Number 12</b>	<b>Large Aluminum Brazing Furnace Scrubber</b>
<b>SWMU Number 13</b>	<b>Small Aluminum Brazing Furnace</b>
<b>SWMU Number 14</b>	<b>Small Aluminum Brazing Furnace Scrubber</b>

<b>SWMU Number 15</b>	<b>Chrome Cleaning Line</b>
<b>SWMU Number 16</b>	<b>Chrome Cleaning Line Scrubber</b>
<b>SWMU Number 17</b>	<b>Aqueous Cleaning Bath</b>
<b>SWMU Number 18</b>	<b>Vapor Degreaser and Still M184</b>
<b>SWMU Number 19</b>	<b>Vapor Degreaser and Still M185 (Former)</b>
<b>SWMU Number 20</b>	<b>Vapor Degreaser and Still M185 (New-Location 1)</b>
<b>SWMU Number 21</b>	<b>Vapor Degreaser and Still M185 (New-Location 2)</b>
<b>SWMU Number 22</b>	<b>Vapor Degreaser and Still M487 (Former)</b>
<b>SWMU Number 23</b>	<b>Vapor Degreaser and Still M487 (New)</b>
<b>SWMU Number 24</b>	<b>Vapor Degreaser and Still M460 (Former-Location 1)</b>
<b>SWMU Number 25</b>	<b>Vapor Degreaser and Still M460 (Former-Location 2)</b>
<b>SWMU Number 26</b>	<b>Vapor Degreaser and Still M567</b>
<b>SWMU Number 27</b>	<b>Vapor Degreaser and Still M394 (Former-Location 1)</b>
<b>SWMU Number 28</b>	<b>Vapor Degreaser and Still M394 (Former-Location 2)</b>
<b>SWMU Number 29</b>	<b>Vapor Degreaser and Still M394 (Former-Location 3)</b>
<b>SWMU Number 30</b>	<b>Two 2,000-Gallon Storage Tanks</b>
<b>SWMU Number 31</b>	<b>Drum Storage Area Number 3</b>
<b>SWMU Number 32</b>	<b>Pretreatment/Drum Storage Area</b>
<b>SWMU Number 33</b>	<b>Non-Hazardous Waste Receptacle</b>
<b>SWMU Number 34</b>	<b>Scrap Metal Storage Bins</b>
<b>SWMU Number 35</b>	<b>Fire Training Area</b>
<b>AOC A</b>	<b>Raw Materials Storage Area</b>
<b>AOC B</b>	<b>Pallet Storage Area</b>
<b>AOC C</b>	<b>Tool Crib/Maintenance Area</b>
<b>AOC D</b>	<b>Paintline</b>

The above-listed SWMUs remain active with the exception of SWMU Numbers 1, 2, 4, 5, 11, 12, 13, 15, 16, 19, 20, 22, 24, 25, 27, 28, 29, and 31. These SWMUs are no longer in operation and, except for a portion of SWMU Number 2, have been dismantled or removed from the site.

Two potential release areas were identified in 1991 by LAW Environmental during an Environmental Site Assessment conducted on behalf of the MHT facility. The areas investigated include two former drum storage areas (SWMU Numbers 4 and 31) where soil borings revealed elevated levels of hazardous substances. LAW recommended further investigation to determine the nature and extent of the contamination.

The facility holds interim status as a treatment, storage, and disposal (TSD) facility. In March 1992, MHT submitted a Revised Closure Plan to the Missouri Department of Natural Resources (MDNR) in order to terminate its interim status.

The gray bat (*myotis griseescens*) is the only federal and state-threatened species known to exist within a 15-mile downstream distance from the facility. No critical habitats or sensitive environments exist at the facility or are within one-half mile. No aquatic critical habitats or sensitive environments exist within 15-miles downstream from the facility.

**FINAL  
ENVIRONMENTAL PRIORITIES INITIATIVE/  
PRELIMINARY ASSESSMENT  
MODINE HEAT TRANSFER INC.  
(FORMERLY SUNDSTRAND TUBULAR PRODUCTS)**

## **1.0 INTRODUCTION**

A visual Site Inspection (VSI) and a Preliminary Assessment (PA) were conducted by Jacobs Engineering Group Inc. (Jacobs), on behalf of the U.S. Environmental Protection Agency (EPA) Region VII, at the Modine Heat Transfer (MHT) facility on Sunset Drive in Camdenton, Missouri, on March 4, 1992. Jacobs performed these tasks within the scope of the EPA Alternative Remedial Contracting Strategy (ARCS) Contract, as a part of the Environmental Priorities Initiative (EPI), Work Assignment Number 47-7JZZ.

### **1.1 Objective**

The objective of the EPI/PA program was to conduct on-site and cursory off-site inspections of MHT in order to characterize Solid Waste Management Units (SWMUs), associated releases, and other Areas of Concern (AOCs). The goals of the inspections were to determine whether a release has occurred or has the potential to occur, to identify any immediate threats to human health or the environment from an actual or potential release, to inventory SWMUs, and to determine if a site has the potential to be placed on the National Priorities List (NPL) based on the PA scoresheet (Revised Hazard Ranking System). The PA scoresheet for the site has been provided as Volume II of this report.

### **1.2 Scope of Work**

The scope of this investigation included the following activities:

- A search of federal and state files to obtain and review all available and pertinent documents that provide background information regarding historic and current facility processes and hazardous waste management practices;
- Development of a detailed site base map to scale, including site features, SWMU and AOC locations;
- Evaluation of potentially-affected populations within a four-mile radius from the site with regard to groundwater and air, and within a 15-mile downstream distance for surface water;
- A well survey within a four-mile radius of the site; and
- Photodocumentation of all SWMUs and related releases and exposure pathways.

## **2.0 SITE DESCRIPTION**

### **2.1 Site Location**

MHT is on Sunset Drive, Camdenton, Missouri, in Camden County (Figure 1). The facility is on the south side of the street. U.S. Geological Survey topographic map coordinates are 38° 00' 345" North latitude and 92° 45' 260" East longitude. The legal description of the site is Section 26, Township 38 North, Range 17 West.

## **2.2 Site Features**

The site was originally woodland-covered hills with a small open field on the western side. In 1967, the facility was constructed and operations began. The facility occupies approximately 100 acres including a 40-acre open field to the west of Section 26, Township 38 North, Range 17 West. The facility presently consists of one manufacturing building approximately 242 feet by 342 feet in size (Figure 2). The manufacturing building has a small cement drainageway on the east side and an asphalt and gravel parking lot on the west side. The facility also includes a 40-acre open field directly west of the manufacturing building. The manufacturing building and parking lot (approximately 60 acres) is secured with a chain-link fence. The nearest residences are 20 feet east of the site on Mulberry Lane. Residential properties lie on the north and east sides, while wooded hills sloping southwest lie on the west and south sides.

The manufacturing building has undergone four construction additions through its history (Figure 3). These additions occurred in 1970 to 1971, 1973, 1979 and 1983. The manufacturing processes have remained basically the same; however, the locations of SWMUs have changed with each successive addition.

## **2.3 Ownership History**

Dawson Metal Products bought the property from the original owner, Mr. LeRoy Rogers, in 1967. The manufacturing building was constructed and operations began that same year. Manufacturing operations produced air conditioning coils and feeder parts from aluminum and copper tubing. In 1974, Sundstrand Tubular Products purchased the facility from Dawson Metal Products and continued operations until 1990. On October 17, 1990, Modine Heat Transfer, Inc., a wholly owned subsidiary of Modine Manufacturing Company, assumed ownership and operations of Sundstrand Tubular Products. Modine Heat Transfer, Inc. is the current owner and operator of the facility.

## **2.4 Nature of Operations**

MHT is a manufacturer of aluminum and copper coils and feeder parts. Manufacturing processes, the wastes generated, and the associated SWMUs are discussed below. EPA waste codes are shown in Table 1.

### **Brazing, Etching and Electroplating**

The MHT manufacturing process consists of aluminum and copper cutting and brazing, aluminum etching, and a limited amount of chromium electroplating. The aluminum etching process includes an acid bath in which a chromium compound is used to remove copper residue from aluminum components. The acid bath is then treated to precipitate the chromium and copper before the liquid is discharged to the Camdenton City sewer system. The chromium precipitate is then further treated to convert all the chromium present to trivalent chromium. A lagoon owned by the City of Camdenton, which received the discharge from the MHT plating process, previously existed northeast of the site (SWMU Number 1). In 1985, a wastewater pretreatment system was installed which is currently in operation (SWMU Number 3).

Wastes generated by MHT have included lubricating/hydraulic oil, solvent-based paint wastes, treatment sludges, and petroleum oil. During a RCRA Compliance Inspection in March 1991, the facility identified four hazardous wastestreams generated at the facility, including:

1. **Waste 1.1.1 - Trichloroethane (spent TCA) Still Bottoms.** This F001 waste is generated during the reclamation of spent TCA, which is generated at a vapor degreasing operation. The distillation unit meets the criteria for a totally enclosed treatment facility and does not require resource recovery certification. This wastestream is handled under a contract with Safety-Kleen. The generation rate is 6,400 lbs. per month.

2. **Waste Paint-Related Material.** This D001 waste is generated from cleaning of paint line equipment at the facility. This waste is handled under contract with Safety-Kleen. The generation rate is 220 lbs. per month.
3. **Wastewater Pretreatment Sludge.** This F006 waste is generated in the facility's wastewater pretreatment process. The material is a low moisture, green powder residue from the facility's filter press. The process generating this waste is categorized as an "Etching and Chemical Milling Process." On-site storage is in 55-gallon metal drums. This waste is landfilled by Chemical Waste Management. The generation rate is 1,600 lbs. per month.
4. **Waste Oil.** Waste oil, classified as Missouri hazardous waste D098, is generated during equipment operation and maintenance throughout the facility. A portion of this waste is sent to Liquid Reclaimers in Oak Grove, Missouri, and some wastes have been sent to Safety-Kleen in Dolton, Illinois. It is blended in the transport truck with the TCA still bottoms (F001) for subsequent off-site incineration. The generation rate is 8,838 lbs. per month.

The plant has used TCA for degreasing operations since December 1990. The plant generated trichloroethylene (TCE) waste during degreasing operations from the early 1970s to December 1990. Prior to 1979, TCE waste was managed in 55-gallon metal drums. From 1972 to 1977, new TCE was purchased in six to 12 drum quantities and stored in the plant. Waste TCE was stored in the gravel area west of the plant (SWMU Number 4), which is the same area identified by the facilities RCRA Part A Application. In 1977, the bulk storage tank was installed in SWMU Number 31. In 1978, MHT began storing TCE waste in the 1,000-gallon horizontal tank (SWMU Number 6), in addition to 55-gallon drums at SWMU Number 31.

During 1972 to 1979, waste was generated, stored, and shipped to reclamation facilities. Since waste management logs were not kept during this period, MHT could not produce exact shipment amounts and dates. MHT did find some correspondence which indicates names of companies that accepted waste TCE in the 1970s.

Company Name	Correspondence Date
Rollins Environmental Services, Inc.	- August 19, 1974
Waste Research and Reclamation Co., Inc.	- July 25, 1975
Clayton Chemical	- December 8, 1977

Additional information provided by MHT indicates that TCE waste generated during the period from 1972 to 1974 was shipped to a solvent reclaimer. In 1974 to 1975, waste was shipped to WR&R, and reclaimed solvent was returned to the facility. Seven thousand gallons of waste oil containing TCE was accumulated between 1975 and October 1982, and was then shipped to Radium Petroleum. The material was steam stripped before shipment so the solvent content was 5 to 10% (Reference 19).

According to information obtained from the facility, the TCE waste was containerized in 55-gallon drums and stored outside the plant at four locations from the 1979 to 1990 (SWMU Numbers 4, 5, 6 and 31). Since 1990, TCA wastes have been stored at SWMU Number 7.

Wastestreams associated with past activities listed on the original 1980 Part A Application (Appendix A) included:

- 1) **Waste 1.1.1-Trichloroethylene (spent TCE) Still Bottoms.** This F001 waste was generated during reclamation of spent TCE from a vapor degreasing operation. The distillation unit met the criteria for a total enclosed treatment facility and did not require resource recovery certification. This wastestream of spent TCE still bottoms was temporarily stored in SWMU Numbers 4, 5, and 31 before being transferred to SWMU Number 6. The wastestream included waste from five vapor degreaser and still operations until 1988. There are presently four vapor degreaser and still units in operation (M184, M185 (new location 2), M487 (new) and M567). The generation rate was estimated at 9,200 lbs. per year.
- 2) F006 wastes (wastewater pretreatment sludge) were estimated to be generated at a rate of 1,350 lbs. per year.
- 3) F007 wastes were estimated to be generated at a rate of 600 lbs. per year.
- 4) F009 wastes were estimated to be generated at a rate of 1,080 lbs. per year.
- 5) Solvent-based paint waste (F017) was estimated to be generated at a rate of 3,000 lbs. per year.

In 1983, F007 and F009 wastes were deleted in response to a RCRA technical review of the Hazardous Waste Technical Part A Permit Application. F017 wastes were changed to the D001 waste code. Previous references to F008 wastes were changed to F006. The EPA technical review and the facility's revised Part A Application are found in Appendix A.

#### Waste Disposal

From 1967 through 1986, Dawson Metal Products (1967 to 1974) and Sundstrand Tubular Products (1974 to 1986) utilized a mudpit and lagoon disposal system (Figure 2). This system is detailed in Section 4.2, SWMU Numbers 1 and 2. The City of Camdenton began closure of the Hulett Lagoon under the Missouri Department of Grants in 1986. Sundstrand Tubular Products replaced the mudpit and lagoon system with a pretreatment wastewater system in 1986 (SWMU Number 3).

TCE wastes were reportedly generated by the facility from the early 1970s to December 1990. From December 1990 to the present, the TCE degreasing operations were changed to TCA. According to information obtained from MHT, TCE wastes were containerized and stored inside the plant in 1971. From 1972 to 1979, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount and destination of the wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co., Inc.; and Clayton Chemical. From 1979 to 1990, TCE wastes were containerized in waste FIN oil storage tank number 1 (SWMU Number 4), 55-gallon drums, or stored in drums outside the plant in four storage locations (SWMU Numbers 4, 5, 6, and 31). After 1979, TCE wastes were stored at SWMU Number 31 (1979 to 1983), SWMU Number 4 (1980 to 1983), SWMU Number 5 (1983 to 1985), and/or SWMU Number 6 (1979 to 1990). TCE wastes were picked up from the facility using pump trucks under a contract handled by Safety-Kleen.

Detailed information regarding former locations of the distilling/degreasing units which produced the TCE and TCA wastestreams were requested from MHT; however, due to the number of modifications made at the facility, complete information describing all former locations was not available.

## **2.5 Permit and Regulatory History**

Operations at the facility began in 1967. The facility is a registered hazardous waste generator, EPA ID Number MOD062439351 and MDNR Number 01417. The facility first submitted a RCRA Part A Application in November 1980 (Appendix A). A revised Part A was submitted in response to a RCRA technical review in 1983 (Appendix A). The most recent revision to this application was filed in December 1990 (Appendix B). Wastes generated and associated SWMUs have not changed since submission of this revision. A RCRA Part B Permit Application has not been filed. The facility holds interim status as a treatment, storage, and disposal (TSD) facility due to the fact that wastes were stored at the Drum Storage Pad for periods longer than 90 days. The facility has submitted an Interim Closure Plan (Appendix C) to terminate its interim status such that it will hold generator status only. The Closure Plan was originally submitted to MDNR in September 1990 and was most recently revised in February 1992. This revised plan is currently under review by MDNR.

A Closure Review Inspection (CRI) was conducted at the MHT facility on December 13, 1991, by Burns and McDonnell. The CRI activities included a tour of hazardous waste management units and a review of facility files on behalf of MDNR.

RCRA Compliance Evaluation Inspections (CEIs) were performed by the MDNR in January 1982, April 1985, February 1987, September 1988, and February 1991. Unsatisfactory features noted in the inspection reports have included manifest errors, insufficient training, open containers, inadequate aisle space, improper labelling, and failure to maintain a contract for waste oil disposal. Revisions were required for the Waste Analysis Plan, the Training Plan, and the Contingency Plan.

The facility holds wastewater discharge permit No. 1990-1 with the City of Camdenton, Missouri, under City Code 68.691 for the discharge of wastewater following the pretreatment system (SWMU Number 3) at the MHT facility (Appendix D).

In response to an alleged 4,500-gallon spill complaint filed with the MDNR, MHT contracted LAW Environmental, Inc. to conduct an Environmental Site Assessment (ESA) of the facility (Appendix E). The purpose of the ESA was to assess site soils in Areas 1 and 2 for the presence of TCE. The two areas under investigation were former 55-gallon drum storage areas outside the manufacturing building, which were used from the 1970s to 1983. Area 1 is SWMU Number 4 and Area 2 is SWMU Number 31. Area 1, along the south wall of the manufacturing building, was covered by a 1983 building addition (SWMU Number 31). Area 2 was 80 feet west of the manufacturing building (SWMU Number 4). The locations of these two storage areas are depicted in Figure 4.

Five soil borings were drilled in Area 1: three borings from the plant floor (HA-1, 2, and 3); and two from the floor of the degreasing machine pit, 5.5 feet below the plant floor surface (HA-4 and 5). Four soil borings were drilled in Area 2: two borings (B-1 and B-2) were drilled in the gravel area next to the west wall; one boring (B-3) was placed near a former surface drainage feature; and one boring (B-4) was placed near the assumed stormwater drainage pipe. Sample locations are depicted in Figures 3 and 4 in Appendix E. A summary of the analytical results of the sampling event is listed in Table 2.

The conclusions and recommendations of LAW Environmental, Inc. are briefly summarized below:

- Groundwater was not addressed in this assessment.
- MHT should prepare and execute a work plan that will define the following:
  - horizontal and vertical extent of the constituents found in the soils at the site and rate of transport;

- detailed geological and hydrogeological characterization of the site; and
- groundwater contamination at the site, including the presence of constituents detected in the soil.
- A regulatory strategy for the facility, based on the results of the recommended additional assessment and on the characterization of the source and source materials of detected constituents, should be developed.

No regulatory enforcement actions for this facility have been filed. No closure actions are currently underway because MHT is awaiting MDNR approval of the Revised Closure Plan, which was submitted February 14, 1992.

### **3.0 ENVIRONMENTAL SETTING**

The purpose of this section is to provide information necessary to evaluate the potential for an environmental release to area groundwater and surface water resources. This information will also provide information regarding potential receptors.

#### **3.1 Area Water Supply**

Public drinking water for the City of Camdenton is provided by the Camdenton Water Department (Reference 1). The City of Camdenton water supply is derived from three deep water wells, which are within the city limits. The nearest well to the facility is Water Well Number 6, which is within 1/4 mile south of the site, adjacent to Mulberry Lane (Figure 1). The legal location of the well is Northwest 1/4 of Northwest 1/4 of Section 25, Township 38 North, Range 17 West (Reference 1). The well was installed in 1986 and is constructed to a depth of approximately 900 feet below grade surface (bgs). Additional well information is detailed in Section 3.4. The municipal water system serves approximately 1,300 customers, mostly city residents. Any person in an outlying rural vicinity must file a petition in order to receive city water. Table 3 contains a listing of wells which are within a four-mile radius of the site (Figure 5). Most of these wells are for domestic use; one well is within one-quarter mile of the site boundary, and two wells are between one-quarter and one-half mile of the site. In the one-half to one, one to two, two to three, and three to four-mile radii, respectively, there are 1, 15, 32, and 31 wells. The well logs for the closest wells identified during the four-mile radius survey and the three Camdenton municipal wells are listed in Appendix F.

#### **3.2 Potential Surface Water Receptors**

Facility storm sewers direct runoff to the south end of the site. Runoff flows in a southwesterly direction through a drainage area to a location west of the site. Site runoff not collected in stormwater controls flows to the southwest-west to a series of manhole collection points which direct runoff through the storm sewer to a lift station. From the lift station, runoff water is directed through a force-main to the Camdenton publicly-owned treatment works (POTW) (Figure 2).

The 15-mile surface water migration pathway includes an unnamed perennial stream northwest of the site which flows west-southwest to the Niangua arm of the Lake of the Ozarks (Figure 6).

#### **3.3 Regional Geology/Hydrogeology**

Bedrock in the region is comprised of Cambrian and Ordovician Age dolomite, cherty dolomite, and sandstone. Sandstone of Pennsylvanian Age sediment occurs in the region, but not in the Camdenton area. Sedimentary bedrock formations in the region are widely recognized throughout the Lake of the Ozarks and

southern Missouri. Variation in lithology from sedimentary deposition sequences is not uncommon. The major bedrock units in the region are mainly dolomite. They are not entirely dolomite, but also contain appreciable amounts of chert and small amounts of other minerals (Reference 5). The stratigraphy has been divided into two sections which are separated by depositional environments and principal aquifers in the region. Deposits of middle Cambrian Age, or below the Derby-Doe Run Dolomite Unit, were formed in a deltaic environment (Reference 4). Above the middle Cambrian, a shallow carbonate platform environment prevailed to which only small quantities of detrital material were available. The depositional environment through the Cambrian and Ordovician is one in which carbonates were deposited, resulting in a rock sequence amenable to widespread dissolution, with few units or formations to intercept groundwater circulation to depths of greater than 1,000 feet (Reference 4).

The Cambrian-aged rocks in the region are approximately 1,200 feet thick (Reference 4). The uppermost unit of the Cambrian-aged rocks is the Potosi Dolomite. The Derby-Doe Run Dolomites underlie the Potosi formation. The Derby-Doe Run dolomite is interbedded with limestone, siltstone, and sandstone layers. The Derby formation underlies this undifferentiated formation and is regionally known as the confining unit in the area. The principal aquifer in the area is in the Potosi Dolomite unit which is approximately 250 feet thick.

The Cambrian and Ordovician Age sediments are separated by the Gunter Sandstone Member rocks which are the base of the Gasconade Dolomite and are stratigraphically the oldest Ordovician rock unit in the area (Reference 4). The Gunter Sandstone Member consists of thinly bedded sandstone 15 to 20 feet thick. The Gasconade Dolomite is recognized by an upper and lower unit. The difference between them is the abundance of chert in the lower unit, while minor amounts are found in the upper unit. The combined thickness of both units are between 280 and 360 feet (Reference 2). Above the Gasconade Dolomite is the Roubidoux Formation which is composed of cherty dolomite and sandstone. The chert content can often exceed 20 percent. Sandstone beds are not prominent in the region (Reference 4). The Roubidoux Formation forms the bedrock surface in Camdenton. The thickness of the formation is approximately 150 feet (Reference 5). The remaining Ordovician Age rocks in the region are the Jefferson City and Cotter Dolomites. Both units have been identified in the region on high ridge tops near Camdenton, approximately 1.5 miles to east. The units are similar and difficult to distinguish from each other and are often referred to as a single unit. The depositional sequence of the units includes frequent fluctuations of sea level which lead to formations of conglomerates, sedimentary pinchouts, lenses of cross-bedded sandstones, and mud cracks (Reference 4). The combined thickness of both units is approximately 400 feet.

Mississippian and Pennsylvanian Age rocks have been identified in the region, but are confined 10 to 20 miles to the south. The younger rocks lie unconformably on the Ordovician sequence due to uplift and erosion at the end of the Silurian.

Bedrock structures of the area are generally characterized by broad, gentle folding. The structural features in the area include northwest trending faults, possibly as old as Precambrian Age. Two of these faults have been identified near Camdenton. Both of these faults are approximately 3.5 miles from Camdenton, one to the east and the other to the west. Vertical displacement can vary from 10 to 400 feet. No information is available on off-set of the two faults located near Camdenton. These faults are known to have formed several graben and horst in the region. Minor Mississippian to Pennsylvanian Age north-west trending high angle faults are noted in the area, but are not within a five-mile radius of Camdenton. In addition to the major faults, there are small numerous connecting faults, fracture, and joints. These features are related to major structural development of the Ozarks and may be related to erosional unloading following uplift in the region. Major drainage in the region is also influenced by structural deformity with subsequent erosion and weathering. Deflected stream channels have resulted in solution-enlarged openings that allow surface precipitation to rapidly recharge groundwater. Karst development is prominent in the area with numerous caves, sinkholes, and losing streams scattered throughout the region.

Surface soil in the area has been classified as residual, alluvial, and colluvial. The Missouri Geologic Survey (MGS) has reclassified the units in the region into easily recognizable characteristics as follows: alluvium, residuum loess (gentle slopes), residuum loess (steep slopes), and residuum colluvium (bedrock) (Reference 6). Alluvium as a general term applies to clastic, or granular, material deposited by rivers on their flood plain. Residuum is a broad term applied to all material that is derived from weathering of bedrock but has not been altered or transported. The residual soils developed in Camdenton were developed on the Roubidoux Formation according to surficial geology maps (Reference 3). Both residuum gentle slopes and steep slopes have been mapped in the area of the facility.

Groundwater used in the area is of good quality, and all bedrock units will yield water to a degree. Wells drilled for private use are typically 150 to 400 feet deep and yield from 10 to 15 gallons per minute (gpm). Public municipalities require higher yields in excess of 250 gpm and are between 500 and 1,000 feet deep. According to well logs within a two-mile radius of Camdenton, domestic, industrial, and municipal wells will vary from 77 feet bgs in the Ordovician Age Gasconade Dolomite unit to over 800 feet bgs in the Cambrian Age Eminence Dolomite unit. No information was available from the MGS regarding any shallow wells completed in the Roubidoux Formation, but it is highly likely that unregistered domestic wells have been constructed. Water yield from wells completed in the Roubidoux Formation is restricted to where it forms the bedrock surface. The Roubidoux can develop large solution fractures that will allow rapid downward water infiltration (Reference 5). Well drillers in the region are warned by MGS to case and seal wells through the entire Roubidoux Formation to prevent possible migration of surficial groundwater contamination (Reference 5). Wells constructed below the Lower Gasconade Dolomite (Ordovician Age) strata, in and around the City of Camdenton, can yield as high as 600 gpm with capacities ranging from 0.90 to 15 gpm per foot drawdown (Reference 4). The high yields have been attributed to four factors (Reference 4):

- Brittle, massive, cherty dolomites with little silt or clay;
- Residuum from solution is small and circulation is not impeded;
- Productive zones are below the base level of erosion, and the present zone of water level fluctuation or pores spaces are always saturated; and
- High hydrostatic pressure and mixing of water from more than one source promote dissolution of dolomite.

Groundwater recharge in the area occurs either through precipitation, which is mainly confined to the shallow bedrock formations, or from upgradient sources outside the region recharging deeper bedrock units. Recharge will occur in upland inter-stream areas by infiltration of water into residual material and then into bedrock. Direct infiltration or diffused circulation can enlarge joints by dissolution (Reference 5). The system will recharge through streams loesses and through conduit in upgradient sinkholes or by concentrated circulation (Reference 5). The regional potentiometric surfaces have gradients toward points of discharge such as seeps, small volume springs, small tributary valleys, and high volume springs. Local recharge will vary with the potentiometric levels in shallow bedrock units due to precipitation. Deeper bedrock units will experience smaller and slower recharge.

### 3.4 Site Geology and Hydrogeology

The Modine facility is situated on a small ridge top with a moderate to steep hillside on the southern portion of the site. The surficial geology has been classified as residuum loess (steep slope) and residuum (gentle slope) (Reference 3). The uppermost soil strata is described as residuum loess composed of stony residuum between one to three meters thick. Residual soil was developed on Ordovician Age Roubidoux Formation, which is a mixture of chert and sandstone cobbles and boulder and sandy to silty clay (Reference 3). Soil formed from

weathered Roubidoux is extremely permeable; water will pass through it relatively easily (Reference 5). It is likely the residuum will have thin caps of loess according to shallow borings performed at the site (Reference 7). The residuum loess is composed of stratified beds of hard broken chert, red silty clay, with layers of sandstone (Reference 3). The residuum can have chert boulder in excess of one meter thick, but most layers contain 15 to 50 percent chert and sandstone fragment that vary in size from 5 to 75 mm (Reference 3).

The closest well in the area is City of Camdenton well number 6 approximately 700 feet south of the facility. This well's total depth is 900 feet bgs with a 12-inch steel casing completed at 400 feet bgs. As stated above, MGS recommends that casings be pressure grouted through upper bedrock zones. According to bedrock maps, the well is obtaining water from primarily Cambrian Age Eminence Dolomite, Ordovician Age Gunter Sandstone, and possibly lower Gasconade Dolomite units. All the City of Camdenton wells are constructed similarly; well number 6 is the closest and has a capacity of 575 gpm. Domestic wells outside of the city limits are usually constructed shallower in the upper Gasconade Dolomite unit or can be as deep as the Eminence Dolomite unit.

According to MGS, there are no confining units below the site or in the region. Overlying loess allows for rapid infiltration. The City of Camdenton has experienced localized effects by private home septic systems. Fortunately, rapid diffusion and dilution has minimized regional impact. Surface water runoff from the facility is controlled by diversion culverts that run on the north and south side of the manufacturing structure. Rainwater is directed by a series of roof drains that are connected to the two culverts. Both culverts channel water from the structure to a steep ravine on the south side of the facility. This ravine discharges to the Niangua

Arm of the Lake of the Ozarks. Other surface water is directed to City of Camdenton storm sewers to the west of the facility. Precipitation infiltration is restricted to the gravel area on the west side of the manufacturing structure.

In November 1991, MHT had their consultant, LAW Environmental, Inc., conduct subsurface borings in two areas to determine if leakage from a TCE drum storage area, or from possible spill areas, had contaminated subsurface soils. Laboratory results from soil samples obtained at depths between one and four feet bgs indicated elevated concentrations of TCE, TCA, and other organic compounds including vinyl chloride. Soil descriptions recorded during this investigation indicated that residuum loess unit type-C of steep slope overlies the Roubidoux Formation at the site. Bedrock maps in the area indicated that residuum thickness near the facility site is variable and can range from 1 to 40 feet bgs. Boring logs from the subsurface investigation in 1991 indicated that bedrock was apparently encountered ranging from 0.75 to 9.0 feet bgs (Reference 7). The variation of thickness is expected with irregularities of residuum thickness. Surficial groundwater was encountered in two of the borings, both of which behaved as artesian systems. As a result, static water level could not be determined. No groundwater samples were collected.

### **3.5 Area Climatology and Meteorology**

Climatological data is based on usable annual data collected over a 30-year period at U.S. Weather Station #23031212 in Camdenton, Missouri. Based on this information, temperatures in the area exceed 90° F on an average of 58 days per year and remain below 32° F on an average of 17 days per year. Average annual precipitation in the area is approximately 65 inches.

Prevailing winds, as reported by the Camdenton Memorial Airport (approximately 1.5 miles southeast of the facility), are primarily from the south-southwest in the spring, from the south in the summer, from the north-northeast in the winter, and from the northwest in the fall (Reference 8).

### **3.6 Critical Habitats and Endangered Species**

Information regarding critical habitats and endangered species within the study area was obtained from the Missouri Department of Conservation (MDC). The MDC reports that only one federal and state-listed endangered species exists in Camden County and the 15-mile downstream area. The grey bat (*myotis griseus*) occurs through the general area, foraging along the lake and streams that feed the Lake of the Ozarks (Reference 9).

No critical habitats or sensitive environments exist at the facility or within one-half mile of the facility (Figure 5). No critical aquatic habitats or sensitive environments exist within 15-miles downstream from the facility (Figure 5) (Reference 9).

### **3.7 Population/Census Information**

Camdenton City is the county seat of Camden County. Camden County has a population of 27,495, with 11,305 households averaging 2.41 persons per household. The City of Camdenton has a population of 2,561, with 1,105 households averaging 2.3 persons per household (Reference 10). Population within a four-mile radius of the MHT facility is estimated to be 5,830 (Reference 11). There are 130 residents living within 1/4 mile of the MHT facility. In the 1/4- to 1/2-, 1/2- to 1-, 1- to 2-, 3- to 4-mile radii, population totals are 640, 560, 454, 1056, 2311, respectively (Reference 11).

## **4.0 VISUAL SITE INSPECTION**

The VSI for the MHT facility was conducted on March 4, 1992. The VSI focused on the past and present wastestreams at the facility in order to identify all SWMUs and AOCs and to collect information beneficial in assessing their potential to release hazardous waste constituents to the environment.

Weather conditions at the facility during the VSI were cloudy, with intermittent showers and temperatures between 60° and 69° F (Reference 12).

### **4.1 Visual Site Inspection Participants**

The following personnel were present during the VSI:

**Mr. Paul Kieler**  
Environmental Scientist  
Jacobs Engineering Group Inc.

**Mr. Steve Freeman**  
Geologist  
Jacobs Engineering Group Inc.

**Mr. Khanh Nguyen**  
Hazardous Waste Division  
Missouri Department of Natural Resources

**Mr. Dave Freise**  
Hazardous Waste Division  
Missouri Department of Natural Resources

**Mr. Bob King**  
**Manager, Quality and Environment**  
**Modine Heat Transfer, Inc.**

**Mr. Don Mans**  
**Plant Engineer**  
**Modine Heat Transfer, Inc.**

#### **4.2 Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs)**

The SWMUs and AOCs and EPA waste codes are listed in Table 1. Wastestreams considered non-hazardous have been so designated based on biannual analyses which are conducted for each wastestream generated on-site, according to facility personnel. The Plant Operations Layout Map and the Past and Present SWMU Locations Map are depicted in Figures 6 and 7, respectively. Photograph numbers are correlated with the SWMU and AOC descriptions, which will be included in Appendix G of the final report.

**SWMU NUMBER: 1**

**SWMU NAME:** Hulett Lagoon

**SWMU DESCRIPTION:** The Hulett Lagoon is 1/4 mile northeast of the Modine facility on the east side of Dawson Road. The lagoon is owned by the City of Camdenton, Missouri. The lagoon was constructed in 1961 under the State of Missouri Grants Program and is approximately one acre in size. The lagoon was constructed of clay, and its berms were approximately 25 feet wide and 15 feet high. The location of the Hulett Lagoon is depicted on Figure 1 as SWMU Number 1 (Reference 15).

Modine began utilizing the lagoon in 1967. The facility would release its untreated wastewater and stormwater into the lagoon through a series of "mudpits" (SWMU Number 2) via a storm sewer.

**DATES OF OPERATION:** The Hulett lagoon was in operation from 1961 until its closure in late 1989. The Modine facility utilized the lagoon for its waste disposal system from 1967 through 1986, when the facility installed its pretreatment wastewater system.

In 1988, the City of Camdenton began RCRA closure of the Hulett Lagoon. The sludge was sampled for metals, and analytical results are presented in Appendix H. High levels of chromium, lead, and nickel were detected. City officials were given several options by MDNR to consider in completing the abandonment and closure of the Lagoon within the MDNR Water Resources Program (Appendix I). The option chosen and implemented by the city was the subsurface application of sludge from the lagoon by spreading it in place and discing and plowing it into the subsurface soils. The berms were then turned in and mixed to a 1:1 ratio with surrounding soils. The sludge was then taken by truck to the municipal airport and land-applied at a field near the runway in accordance with the terms of the MDNR correspondence contained in Appendix I. No confirmation samples were collected following removal of the sludge. The city is in the process of leveling the site of the former lagoon and opening it up for a neighborhood park (Reference 15). It should be mentioned that using this area for purposes other than sewage sludge disposal is contrary to the terms agreed upon between MDNR and the City of Camdenton.

**WASTES MANAGED:** Wastes managed by the Hulett Lagoon included all wastewater, stormwater, and aluminum and copper cleaning line wastes from the MHT facility. Information regarding the type and quantity of waste distributed and accumulated at the Hulett Lagoon is not available. Potential wastes handled include: F001, F006, D001, and D098.

**RELEASE CONTROLS:** Release controls at the Hulett Lagoon include clay lining and berms.

**RELEASE HISTORY:** The Hulett Lagoon was the site for release of all untreated process wastes from the MHT facility. As stated previously, elevated levels of chromium, lead, and nickel were detected in the sludge analysis recorded during closure of the lagoon.

**MIGRATION PATHWAYS:** The primary migration pathways for contaminants in order of decreasing likelihood would be soil, surface water, and groundwater.

**PHOTOGRAPH NO.:** 1 and 2

**SWMU NUMBER:** 2

**SWMU NAME:** Mudpits

**SWMU DESCRIPTION:** Four "mudpits" (sumps) were located approximately 10 feet west of the manufacturing building. The mudpits were approximately 15 feet apart, running from the scrap-metal bins to the pretreatment/drum storage area (SWMU Number 32). Each mudpit consisted of a 4-foot by 4-foot cement sump approximately 4 feet in depth. Two of the four mudpits no longer exist and are beneath the pretreatment/drum storage area. The location of the mudpits is depicted on Figure 3 as SWMU Number 2.

The mudpits were connected by a 6-inch steel line that delivered stormwater, boiler water, chrome, copper, and aluminum cleaning line waste from the manufacturing process. Each sump received the previous sump's wastes until wastewater was discharged into the sewer. The southern-most mudpit was an open pit which collected boiler water and stormwater. The second mudpit directly collected aluminum cleaning line waste and stormwater from the first. The third and fourth mudpits collected copper cleaning line waste in addition to the aluminum cleaning line waste and the stormwater runoff. These four mudpits collectively discharged wastewater into a storm sewer line which led directly to the Hulett Lagoon (SWMU Number 1)(Reference 12).

**DATES OF OPERATION:** The mudpits were in operation from 1967 to 1986. Two of the four mudpits were removed to construct the pretreatment/drum storage area. The two remaining mudpits, which are no longer in service, are covered by plywood sheets.

**WASTES MANAGED:** Wastes managed by the mudpits included wastewater, stormwater, and aluminum and copper cleaning line wastes. Information on the type and quantity of waste accumulated and distributed through the mudpits is unavailable. Potential wastes handled by these units include: F001, F006, D001, and D098.

**RELEASE CONTROLS:** Release controls for the mudpits included the 4-foot by 4-foot concrete sump walls which were 6 inches in width. The sums were covered on the surface by a wooden ply-board which prevented precipitation from entering the sums. The southern-most sum was not covered, however, and did receive run-on from the manufacturing building. No other release controls or secondary containment were utilized at this SWMU.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the mudpits during the operation lifetime.

**MIGRATION PATHWAYS:** If a release were to occur from the mudpits, the primary migration pathways would be soil, surface water, groundwater, and air, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 3

**SWMU NUMBER: 3**

**SWMU NAME:** Pretreatment Wastewater System

**SWMU DESCRIPTION:** The pretreatment wastewater system and filter press is at the south end of the pretreatment/drum storage area (SWMU Number 22). The location of the pretreatment system is depicted on Figure 4 as SWMU Number 3.

The pretreatment wastewater system was designed and installed by the DMP Corporation in 1985 and operations began in early 1986. The system receives wastewater from manufacturing processes throughout the facility, such as copper and aluminum cleaning lines (SWMU Numbers 8 and 10), the aqueous cleaning bath (SWMU Number 17), the Large Aluminum Brazing Furnace and Large Aluminum Brazing Furnace Scrubber (SWMU Numbers 11 and 12), Tool Crib/Maintenance Area (AOC C), and Paint Line (AOC D). Wastewater is piped from the wastewater system to the pretreatment area. Wastewater is added to the acid/alkali rinse sump and/or the chrome rinse sump to reduce chromium concentration. The wastewater is then transferred to the treatment reactor tank where chemical reagents are added. From the treatment reactor tank, the wastewater then flows to the neutralization tank for pH adjustment. From the pH tank, the water is flocculated and sent to the clarifier. After clarification, the wastewater is transferred to the filter press where the sludge is removed and transferred to the filter cake storage box, and the water is returned to the sump. The filter cake storage box consists of a large 4-foot by 4-foot cardboard box lined with polyethylene plastic. The box has a cardboard lid and is opened when the filter press tray is ready to be emptied into the box. The filter press tray contains sludge/solids from the pretreatment wastewater system. The amount of pretreatment sludge is proportional to the pretreatment system flow rate. The filter cake storage box is removed and replaced within a 90-day period. A Crecko packed column scrubber (SWMU Number 14) was added to reduce any potential acidic or chromic vapors released by the system. All wash water from the scrubber is recirculated and treated by the pretreatment wastewater system. The pre-treated water is discharged to the sewer system and treated by the Camdenton POTW. The facility possesses a 1990 to 1991 permit from the Camdenton POTW for the disposal of pre-treated wastewater or retained for reuse in a storage tank (Reference 12 and 16).

**DATES OF OPERATION:** The pretreatment wastewater system was installed in 1985. This unit is presently in operation.

**WASTES MANAGED:** Wastes managed at the pretreatment system included F006 pretreatment waste, which is a green powder residue from the filter press generated at a rate of 1,600 lbs. per month. The process generating this waste is categorized as an "Etching and Chemical Milling Process." The pre-treated wastewater is discharged to the sewer system, which is treated by the Camdenton POTW.

**RELEASE CONTROLS:** In the pretreatment/drum storage area, where the pretreatment wastewater system is located, reinforced concrete flooring with curbs was poured to form a leak-tight containment area. According to facility representatives, no cracks had developed or had to be repaired prior to the application of the chemical resistant coating. The curbed area was designed to hold 110 percent of the largest tank in the room, or 5,830 gallons. The SWMU is enclosed in a concrete-walled and roof-covered area.

**RELEASE HISTORY:** No record or documentation of any release of materials is associated with the pretreatment wastewater system.

**MIGRATION PATHWAYS:** If a release were to occur from the pretreatment wastewater system, the primary migration pathways, in order of decreasing likelihood, would be air, soil, groundwater and surface water.

**PHOTOGRAPH NO.: 4 and 5**

**SWMU NUMBER: 4**

**SWMU NAME:** Drum Storage Area Number 1

**SWMU DESCRIPTION:** Drum storage area number 1 was approximately 80 feet west of the mechanical room, on the west side of the manufacturing building. The former location of drum storage area number 1 is depicted on Figure 4 as SWMU Number 4. Drums were stored at this area from 1972 to 1977. A more permanent area was built in 1980.

Drum storage area number 1 was constructed of a gravel base and was approximately 25 feet by 30 feet in size. The storage area was constructed by compacting a base rock and clay mixture on top of clay fill. This unit was retired from waste storage in 1983. Six to twelve drums were stored at this location from 1972 to 1977.

**DATES OF OPERATION:** The permanent storage area was constructed in 1980 and was utilized for drum storage until 1983. The storage area was graded in 1983, and a gravel and cement parking lot for employees was constructed over this location. The storage area closure activities occurred in November of 1990. Closure activities included grading the area to incorporate into the gravel base of the employee parking lot. The closure activities for this unit have not been approved by MDNR.

**WASTES MANAGED:** The drum storage area was used to store at one time up to 45 drums of liquid and sludge prior to 1983. Wastes consisted of TCE still bottoms (F001), waste paint filters and liquid (D001), as well as non-hazardous waste oil.

**RELEASE CONTROLS:** There were no release controls or secondary containment during the operations history of this storage area. Plastic drum covers were used to prevent contamination or deterioration caused by precipitation.

**RELEASE HISTORY:** Oil residues from empty drums are known to have occurred at this location. Residues from 40 empty drums are estimated to be 10 to 15 gallons of oil (Reference 12). In response to an alleged 4,500-gallon spent solvent spill complaint filed with the MDNR, MHT contracted LAW Environmental, Inc. to conduct an Environmental Site Assessment (Appendix E). A portion of the site assessment included the approximate location of the former drum storage area number 1 (area number 2 of the ESA). Four soil borings were drilled in the area of this SWMU: two borings (B-1 and B-2) were drilled in the gravel area next to the west wall; one boring (B-3) was placed near a former surface drainage feature; and one boring (B-4) was placed near the presumed location of the stormwater drainage pipe. Sample locations near drum storage area number 1 are depicted in Figure 4 of Appendix E. Analytical results for this location are summarized in Table 2 and are discussed in Appendix E.

**MIGRATION PATHWAYS:** The primary migration pathway at this location was to the soil. The potential exists for groundwater and surface water contamination.

**PHOTOGRAPH NO.: 6**

**SWMU NUMBER: 5**

**SWMU NAME:** Drum Storage Area Number 2

**SWMU DESCRIPTION:** Drum storage area number 2 was situated 10 feet from the west wall of the manufacturing building north of the scrap metal bins. The storage area consisted of a concrete slab and containment wall. The storage area contained approximately 15 to 20 55-gallon drums at one time (Reference 12). The area had no roof, so plastic drum covers were used to prevent contamination or deterioration caused by precipitation. The location of the Drum Storage Area is depicted on Figure 4 as SWMU Number 5.

Drum storage area number 2 was constructed in 1983 of steel-reinforced concrete. The area consisted of a concrete slab approximately 25 feet by 30 feet in size with an 8-inch concrete containment wall which had enough capacity to contain a leak from a 5,300-gallon storage tank. Two tanks were within the containment area in 1985 (Reference 12). The first tank was a 1,000-gallon steel storage tank used for waste oil (D098). The second tank was a 5,300-gallon steel storage tank used to store TCE still bottom wastes (F001). The exact location of these tanks is unknown.

**DATES OF OPERATION:** Drum storage area number 2 was installed in 1983 and continued operations through 1985. The concrete slab and the secondary containment wall were removed to facilitate the construction of the new wastewater pretreatment/drum storage area. Although the storage area was removed in 1985, the date of RCRA closure is listed as November 1990 (Reference 13).

**WASTES MANAGED:** Wastes managed at the drum storage area number 2 included waste oil (D098), TCE still bottoms (F001), paint wastes containing xylene (F003), and waste paint filters (D001).

**RELEASE CONTROLS:** Release controls noted in the description above include the concrete slab and concrete containment wall. There was no roof over the storage area, so plastic drum covers were used to protect barrels from precipitation.

**RELEASE HISTORY:** Pump seal leakage and tank overflow were noted within the containment area (Reference 13). Solvent wastes and materials resulting from the containment of spills were shipped to Safety-Kleen for treatment and disposal (Reference 14).

**MIGRATION PATHWAYS:** If a release were to occur from the containment structure of drum storage area number 2, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.: 7**

**SWMU NUMBER: 6**

**SWMU NAME:** Waste FIN Oil Storage Tank Number 1

**SWMU DESCRIPTION:** The waste FIN oil storage tank number 1 is at the north end of the pretreatment/drum storage area. The tank is next to the FIN oil storage tank number 2 and is the western most of four tanks. The waste FIN oil storage tank number 1 is constructed of steel and is approximately 6 feet in length and has a radius of approximately 2 feet. The tank holds 1,000 gallons at capacity and is horizontally supported by four steel girders. This tank receives all waste oils from maintenance and operational processes throughout the facility. The location of the waste FIN oil storage tank number 1 is depicted on Figure 4 as SWMU Number 6.

The tank has been used for two separate functions: a TCE storage tank at drum storage area number 3 (SWMU Number 31) from 1978 to 1983, then at the pretreatment/drum storage area from 1985 to 1990; and as a waste FIN oil storage tank from 1990 to present. MHT had inspected and certified the tank clean after removal and closure activities were completed in 1990. MHT officials indicated the tank had been wipe sampled and inspected prior to its use as a waste FIN oil tank. Note that the closure of this tank was not approved by MDNR. Documentation pertaining to the closure activities of the tank were received from MHT and form Appendix J of this report (References 12, 17, and 18).

**DATES OF OPERATION:** The waste FIN oil storage tank number 1 has been in operation from 1978 to the present. The tank received TCE Waste from 1978 to 1990. From 1990 to 1991, the tank was put back into service, after spending a short period of time in storage, as a waste FIN oil tank number 1 and is still in service.

**WASTES MANAGED:** Waste managed in this tank from 1983 to 1990 included spent TCE (or still bottoms) from all Vapor Degreasers in operation during this time period (SWMU Numbers 18, 21, 25, 26, 28, 29, and 30). These F001 wastes were generated at 6,400 lbs. per month and were handled under a contract with Safety-Kleen. Wastes managed in this tank from 1990-91 to present include waste FIN oil. FIN oil is a mineral oil that retains its name from the process it is incorporated in. The oil is used during the "stamping" or "pressing" cut outs of aluminum fins. FIN oil is used during the manufacturing of aluminum air conditioning fins for fan units. Sheet aluminum is pulled from large sheet aluminum rolls, dipped into "FIN oil" (stamping oil and cut into fins by a press while excess aluminum is scrapped for recycling. The Material Safety Data Sheet (MSDS) for FIN oil has been provided as Appendix K to this report.

Waste managed consists of waste oil, classified as MDNR hazardous waste D098. Waste oil is generated throughout the facility during process operation and maintenance. The generation rate is 8,838 lbs. per month. A portion of this waste is sent to Liquid Reclaimers, Oak Grove, Missouri, and some is sent to Safety-Kleen in Dolton, Illinois. It is blended in the transport truck with the F001 wastestream for a fuel blending program by Liquid Reclaimers (Reference 12).

**RELEASE CONTROLS:** In the pretreatment/drum storage area where the waste FIN oil storage tank number 1 is located, reinforced concrete floor with curbs was poured to form a leak-tight containment area. No cracks had developed or had to be repaired prior to the application of the chemical resistant coating, according to facility representatives. The curbed area was designed to hold 110 percent of the largest tank in the room, or 5,830 gallons. The SWMU is enclosed in a concrete-walled and roof-covered area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the waste FIN oil storage tank number 1.

**MIGRATION PATHWAY:** If a release were to occur from the waste FIN oil storage tank number 1, the primary migration pathways would be soil, groundwater, and surface water, in decreasing order of likelihood.

**SWMU NUMBER:** 6 (continued)

**PHOTOGRAPH NO.:** Not photographed.

**SWMU NUMBER:** 7

**SWMU NAME:** TCA Waste Storage Tank Number 6

**SWMU DESCRIPTION:** The TCA waste storage tank number 6 is at the north end of the pretreatment/drum storage area against the east wall. The tank is south of the FIN oil tank number 5 and the TCA distribution tank number 4. The tank is constructed of steel and holds 2,500 gallons at capacity. The bottom 4 feet of the tank is cone-shaped and has a flat top in which waste TCA is received. The location of the TCA waste storage tank number 6 is depicted on Figure 4 as SWMU Number 7. The present TCA wastestream is depicted in Figure 7.

**DATES OF OPERATION:** The TCA waste storage tank number 6 was installed in 1985 and has been in service until the present.

**WASTES MANAGED:** Wastes managed in the TCA waste storage tank number 6 consist of TCA still bottoms (F001) from the M185. The waste is generated at a rate of 6,400 lbs. per month. This wastestream is handled under a contract with Safety-Kleen, which directly pumps the wastes from this tank to the truck.

**RELEASE CONTROLS:** In the pretreatment/drum storage area where the TCA waste storage tank number 6 is located, reinforced-concrete flooring with curbs was poured to form a leak-tight containment area. No cracks had developed or had to be repaired prior to the application of the chemical resistant coating, according to facility representatives. The curbed area was designed to hold 110 percent of the largest tank in the room, or 5,830 gallons. The SWMU is enclosed in a concrete-walled and roof-covered area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the TCA waste storage tank number 6.

**MIGRATION PATHWAY:** If a release were to occur from the TCA waste storage tank number 6, the primary migration pathway would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 8

**SWMU NUMBER: 8**

**SWMU NAME:** Copper Cleaning Line

**SWMU DESCRIPTION:** The copper cleaning line is at the north end of the manufacturing building, northwest of the copper brazing area. The copper cleaning line runs east to west and is situated next to the copper tubing cutters. The location of the copper cleaning lines is depicted on Figure 4 as SWMU Number 8.

The copper cleaning line consists primarily of nine liquid baths adjacent to one another, which form a wash and rinse cycle to remove oil, grease, oxides, and solids from copper parts manufactured at the plant. The line is approximately 30 feet in length and 5 feet in width. Baths are constructed of welded stainless steel metals and are approximately 2 feet 6 inches in width, 3 feet in length, and 3 feet in depth. Each batch could hold approximately 200 gallons of alkaline cleaner, 200 gallons of phosphoric acid cleaner, 100 gallons sulfuric acid cleaner, 100 gallons of citric acid cleaner and 500 gallons of rinse water (Reference 19). The baths do not operate at capacity. The final two baths contain two steel mesh tumblers which rotate in heated dryers to facilitate the drying of parts. The wash and rinse cycles include: Ridoline Number 53 (solvent), rinse water, CU-Brite/nitric acid, rinse water, and citric acid baths. After parts complete the wash and rinse cycles (taking 9 to 20 minutes), they are dried using tumble dryers or ovens (References 12, 16, and 17).

**DATES OF OPERATION:** The copper cleaning line has been in operation from 1967 to present.

**WASTES MANAGED:** Wastes managed at the copper cleaning line include all waste wash water, rinse water, nitric and citric acids, and solvents. Prior to entering the pretreatment wastewater system, the wastewater contains mild silicate alkaline cleaners, nitric acid-phosphorous acid mixture (used in copper etching) and associated rinse waters. The wastestream from the cleaning line is directed through the plant's pretreatment wastewater system. Treated wastewater is released to the Camdenton City POTW. Waste from the pretreatment sludge is a low moisture, green powder residue from the facility's filter press, classified as EPA waste code F006. The process generating this waste is categorized as an "Etching and Chemical Milling Process." On-site storage is in 55-gallon metal drums, and this waste is landfilled by Chemical Waste Management. The generation rate is 1,600 lbs. per month.

**RELEASE CONTROLS:** No release controls or secondary containment are present at the copper cleaning line.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the copper cleaning line.

**MIGRATION PATHWAYS:** If a release were to occur from the copper cleaning line, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.: 9**

**SWMU NUMBER: 9**

**SWMU NAME:** Copper Line Scrubber

**SWMU DESCRIPTION:** The copper line scrubber operates at the north end of the manufacturing building, northwest of the copper brazing area. The copper line scrubber is attached to the nitric acid bath portion of the copper cleaning line (SWMU Number 8). The scrubber utilizes spray water over a packed column of tubular pieces and metal brushes arranged in a baffled system. The scrubber's primary function is to remove nitrous oxide from exhaust air, leaving the nitric bath portion of the copper cleaning line. The copper line scrubber is rated at approximately 600 cfm. The scrubber operates on top of the manufacturing building. The location of the copper line scrubber is depicted on Figure 4 as SWMU Number 9 (References 16 and 17).

**DATES OF OPERATION:** The copper line scrubber has been in operation from 1970 to the present.

**WASTES MANAGED:** Wastes managed at the copper line scrubber include spray water containing solvents and nitric acids. From 1970 to 1985, the wastestream was directed through enclosed piping to the mudpit and lagoon system (SWMU Numbers 1 and 2). From 1985 to present, the wastestream has been directed through enclosed piping to the pretreatment wastewater system (SWMU Number 3).

**RELEASE CONTROLS:** No release controls or secondary containment are associated with this unit.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the copper line scrubber during the operational lifetime of this unit.

**MIGRATION PATHWAYS:** If a release were to occur from the copper line scrubber, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 10

**SWMU NAME:** Aluminum Cleaning Line

**SWMU DESCRIPTION:** The aluminum cleaning line is at the west side of the building, west of the aluminum brazing area. The aluminum cleaning line runs east to west and is depicted on Figure 4 as SWMU Number 10.

The aluminum cleaning line consists primarily of eight liquid baths adjacent to one another, which form a wash and rinse cycle to remove oil, grease, oxides, and solids from aluminum parts manufactured at the plant. The line is approximately 25 feet in length and 5 feet in width. Baths are constructed of welded stainless steel metals and are approximately 2 feet 6 inches in width, 3 feet in length and 3 feet in depth. Each batch could hold approximately 200 gallons of alkaline cleaner, 200 gallons of acid deoxidizer, and 1200 gallons of rinse water (Reference 19). However, the baths are not operated at capacity. The final two baths contain two steel mesh tumblers which rotate in heated dryers to facilitate the drying of parts. The wash and rinse cycle includes Ridoline #27 (solvent), nitric acid, and rinse water. After the parts complete the wash and rinse cycles, they are dried using tumble dryers or ovens (References 12, 16, 17, and 19).

**DATES OF OPERATION:** The aluminum cleaning line has been in operation from 1967 to present.

**WASTES MANAGED:** Wastes managed at the aluminum cleaning line include all wastewater, rinse water, nitric and citric acids, and solvents. Prior to the pretreatment wastewater system, wastewater contains strong alkaline etching cleaner that has been deoxidized with a potassium dichromate and associated rinse waters. Wastestream from the cleaning line is directed through the plant's pretreatment wastewater system. Treated water is released to the Camdenton City POTW. Waste from the pretreatment sludge is classified as EPA waste code F006. The material is a low moisture, green powder residue from the facility's filter press. The process generating this waste is categorized as an "Etching and Chemical Milling Process." On-site storage is in 55-gallon metal drums, and waste is landfilled at Chemical Waste Management. The generated rate is 1,600 lbs. per month.

**RELEASE CONTROLS:** No release controls or secondary containment are present at the aluminum cleaning line.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the aluminum cleaning line.

**MIGRATION PATHWAYS:** If a release were to occur from the aluminum cleaning line, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 10

**SWMU NUMBER:** 11

**SWMU NAME:** Large Aluminum Brazing Furnace

**SWMU DESCRIPTION:** The large aluminum brazing furnace operated in the aluminum brazing area directly east of the pretreatment wastewater system. The location of the large Lindberg Model M-190, aluminum brazing furnace is depicted on Figure 4 as SWMU Number 11. The large aluminum brazing furnace was used to braze all aluminum parts to uniformly smooth-out rough edges and cut marks prior to cleaning. The furnace was a cyclone box furnace model that measured 60 inches in width by 60 inches in length by 48 inches in height with a maximum temperature of 1,400 degrees Fahrenheit and was constructed of steel. The load of aluminum parts brazed varied proportionately with production rates. Exhaust from the brazing furnace was sent to the large aluminum brazing furnace scrubber (SWMU Number 12) (References 16 and 17). The furnace is presently stored in a warehouse in Eldon, Missouri (Reference 19).

**DATES OF OPERATION:** The large aluminum brazing furnace operated from 1971 to 1989.

**WASTES MANAGED:** Waste managed at the large aluminum brazing furnace consisted primarily of metallic exhaust fumes from the brazing process. Exhaust fumes were directed through an enclosed piping system to the large aluminum brazing furnace scrubber (SWMU Number 12), which washed the exhaust and directed the spray water to the mudpit and lagoon system (1971 to 1985) or the pretreatment wastewater system (1985 to 1989).

**RELEASE CONTROLS:** No release controls or secondary containment are associated with this unit.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the large aluminum brazing furnace.

**MIGRATION PATHWAYS:** If a release were to have occurred from the large aluminum brazing furnace, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 12

**SWMU NAME:** Large Aluminum Brazing Furnace Scrubber

**SWMU DESCRIPTION:** The large aluminum brazing furnace scrubber operated on the roof of the manufacturing building directly east of the pretreatment wastewater system. The location of the large aluminum brazing furnace scrubber is depicted on Figure 4 as SWMU Number 12. The scrubber receives exhaust fumes from the large aluminum brazing furnace. The scrubber was manufactured by Crecko. It was a large, packed column scrubber with baffled steel crushes. Water was sprayed over the packed column to remove oxides and vapors. The scrubber was rated at 3,500 cfm (References 16 and 17). The scrubber is presently stored outside on the ground next to the scrap metal bins (SWMU Number 34).

**DATES OF OPERATION:** The large aluminum brazing furnace scrubber operated from 1973 to 1989.

**WASTES MANAGED:** Waste managed at the large aluminum brazing furnace scrubber included wash water which was sprayed over the tubular pieces and brushes inside the packed column. The water was directed through the enclosed piping system to the mudpits and lagoon system (1973 to 1985) or to the pretreatment wastewater system (1985 to 1989).

**RELEASE CONTROLS:** No release controls or secondary containment are associated with this unit.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the large aluminum brazing furnace scrubber during the operational lifetime.

**MIGRATION PATHWAYS:** If a release were to have occurred from the large aluminum brazing furnace scrubber, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 13

**SWMU NAME:** Small Aluminum Brazing Furnace

**SWMU DESCRIPTION:** The small aluminum brazing furnace operated in the aluminum brazing area directly east of the pretreatment wastewater system. The location of the small aluminum brazing furnace is depicted on Figure 4 as SWMU Number 13. The small aluminum brazing furnace, Lindberg Model M-189, was used to braze aluminum parts to uniformly smooth out rough edges and cut marks prior to cleaning. The furnace was a box furnace model that measured 30 inches in width by 30 inches in length and 30 inches in height with a maximum temperatures of 1,200 degrees Fahrenheit, and was constructed of steel. The load of aluminum parts brazed varied proportionately with production rates. Exhaust from the brazing furnace was sent to the small aluminum brazing furnace scrubber (SWMU Number 14) (References 16 and 17). The furnace was sold to an equipment dealer at an undetermined date (Reference 19).

**DATES OF OPERATION:** The small aluminum brazing furnace operated from 1971 to 1985. The present location of the small aluminum brazing furnace is not known.

**WASTES MANAGED:** Waste managed at the small aluminum brazing furnace consisted primarily of exhaust fumes from the brazing process. Exhaust fumes were directed through an enclosed piping system to the small aluminum brazing furnace scrubber, which washed the exhaust and directed the spray water to the mudpit and lagoon system (1971 to 1985).

**RELEASE CONTROLS:** No release controls or secondary containment are associated with this location.

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the small aluminum brazing furnace.

**MIGRATION PATHWAYS:** If a release were to have occurred from the small aluminum brazing furnace, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 14

**SWMU NAME:** Small Aluminum Brazing Furnace Scrubber

**SWMU DESCRIPTION:** The small aluminum brazing furnace scrubber operated on the roof of the manufacturing building directly east of the pretreatment wastewater system. The location of the small aluminum brazing furnace scrubber is depicted on Figure 4 as SWMU Number 14. The scrubber received exhaust fumes from the small aluminum brazing furnace. The scrubber is a small packed column scrubber with baffled steel brushes manufactured by Crecko. Water was sprayed over the packed column to remove oxides and vapors received from the small aluminum brazing furnace. The scrubber is rated at 2,000 cfm (References 16 and 17). The scrubber is now in service as part of the pretreatment wastewater system.

**DATES OF OPERATION:** The small aluminum brazing furnace scrubber operated over the small aluminum brazing furnace from 1973 to 1985. In 1985, the small aluminum brazing furnace was taken out of service and the scrubber was installed on the pretreatment wastewater system and is still presently operating. The Crecko packed column scrubber reduces any potential acidic or chromic vapors released by the system. Wash water from the scrubber is recirculated and treated by the pretreatment wastewater system.

**WASTES MANAGED:** Waste managed at the small aluminum brazing furnace scrubber included an enclosed piping system direct from the scrubber to the mudpit and lagoon system and to the pretreatment wastewater system (1985 to present). All wash water from the scrubber is recirculated and treated by the pretreatment wastewater system (1973 to 1985).

**RELEASE HISTORY:** There is no record or documentation of release of materials associated with the small aluminum brazing furnace scrubber during the operational lifetime.

**MIGRATION PATHWAYS:** If a release were to have occurred from the small aluminum brazing furnace scrubber, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 15

**SWMU NAME:** Chrome Cleaning Line

**SWMU DESCRIPTION:** The chrome cleaning line consisted primarily of two liquid baths adjacent to one another which formed a wash and rinse cycle to remove oil, grease, oxides, and solids from chrome tools manufactured at the plant. Baths were constructed of welded stainless steel sheet metal and were approximately 14 inches in width by 24 inches in length and 42 inches in height. The wash and rinse cycles included: a chromic acid rinse and a water rinse. After chrome tools complete the wash and rinse cycles, tools were dried using a tumble dryer or oven. A scrubber was used over the chromic acid bath (SWMU Number 16). Each bath could hold a capacity of approximately 100 gallons of liquid. The baths, however, were not used in operation at capacity. The final two baths contained two steel mesh tumblers which rotated in heated dryers to facilitate drying of the chrome tools. The location of the chrome cleaning line is depicted on Figure 4 as SWMU Number 15 (References 16 and 17). The chrome cleaning line was used for tooling only; reportedly it was never used for production (Reference 19).

**DATES OF OPERATION:** The chrome cleaning liner operated from 1973 to 1985. In 1985, the chrome operation was dismantled and removed to unknown locations and scrapped.

**WASTES MANAGED:** Wastes managed at the chrome cleaning line included chromic acid and water rinse. The wastestream was directed through the mudpit and lagoon system (SWMU Numbers 1 and 2).

**RELEASE CONTROLS:** No release controls or secondary containment were present at this location.

**RELEASE HISTORY:** There is no record or documentation of a release of materials associated with the chrome cleaning line.

**MIGRATION PATHWAYS:** If a release were to occur from the chrome cleaning line, the primary migration pathways would be, air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 16

**SWMU NAME:** Chrome Line Scrubber

**SWMU DESCRIPTION:** The chrome line scrubber operated on the northeast corner of the manufacturing building. The chrome line scrubber was attached to the chromic acid bath portion of the chrome cleaning line (SWMU Number 15). The scrubber is a Heil Model 732-MF fume scrubber which utilized a baffled system with steel brushes and water spray to "scrub" exhaust air from the chrome cleaning line. The scrubber used water to wash exhaust of chromic acid vapors and nitric acid oxides. The chrome line scrubber was rated at 2,000 cfm. The chrome cleaning line, which the scrubber was attached to, was taken out of service in 1985 and dismantled. The scrubber has been inoperative and located on the northeast corner of the manufacturing building roof. The location of the chrome line scrubber is depicted on Figure 4 as SWMU Number 16 (References 16 and 17).

**DATES OF OPERATION:** The chrome line scrubber was in operation from 1973 to 1985.

**WASTES MANAGED:** Wastes managed at the chrome line scrubber included wash water that was sprayed over the tubular pieces inside the packed column. The spray water included removed chromic acid vapors, solvents, and nitric oxides. The wastestream was directed through the mudpit and lagoon system (SWMU Numbers 1 and 2).

**RELEASE CONTROLS:** No release controls or secondary containment were associated with this unit.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the chrome line scrubber.

**MIGRATION PATHWAYS:** If a release were to occur from the chrome line scrubber, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 17

**SWMU NAME:** Aqueous Cleaning Bath

**SWMU DESCRIPTION:** The aqueous cleaning bath is south of the cooling tower in the center of the manufacturing building. The aqueous cleaning bath is a M500 cleaning system used to clean large condenser coils. The process uses a mild alkaline cleaner to remove oil. The system includes 16 tanks of 660 gallon capacity each. Twelve tanks contain the cleaner, and the remaining four are cascading rinse tanks. Floating oil is removed from all cleaner tanks and collected at the end, using a series of pumps and gravity separation collection tanks. Additional separation of oil and cleaner is accomplished with ultrafiltration. Oil from the ultrafilter and the M500 gravity settler is pumped to the pretreatment wastewater system where the oil is separated through a three tank gravity settler. The location of the aqueous cleaning bath is depicted on Figure 4 as SWMU Number 17 (References 16 and 17).

**DATES OF OPERATION:** The aqueous cleaning bath has been in operation since 1986.

**WASTES MANAGED:** Wastes managed at the aqueous cleaning bath are transferred to the pretreatment wastewater system and are incorporated into the F006 sludge wastestream. The generation rate for the F006 waste is 1600 lbs. per month. Waste oil from this process is shipped to Liquid Reclaimers Inc. of Oak Grove, Missouri, where water and contaminants are removed in a vacuum filtration process. The cleaned oil is returned to MHT, blended with new oil to be reused in their processes. The generation rate for the D098 waste oil is 8,838 lbs. per month.

**RELEASE CONTROLS:** No release controls or secondary containment are associated with this unit.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the aqueous cleaning bath. No visible stains or signs of release were observed in the operation area during the VSI.

**MIGRATION PATHWAYS:** If a release were to occur from the aqueous cleaning bath, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 11

**SWMU NUMBER:** 18

**SWMU NAME:** Vapor Degreaser and Still M184

**SWMU DESCRIPTION:** The vapor degreaser and still M184 is next to the copper cleaning line at the north end of the manufacturing building. The location of this unit is depicted on Figures 4 and 8 as SWMU Number 18. The vacuum degreaser storage tank and attached still are constructed of type 304 stainless steel. The overall dimensions of the unit is 9 foot 2 inches in length and 6 foot 1 inch in overall width. The manufacturer of the unit, Baron Blakeslee, describes the degreaser as a liquid vapor (LV) open-top machine.

This unit is designed to remove grease from manufactured copper parts through solvent vapor and water spray. Copper parts are loaded into a mesh steel cage and are lowered into the solvent vapor zone. The vapor is then sprayed over the copper parts at a low temperature. The low solvent spray temperature aids in vapor condensation. The vapor runs over the condensing separator, allowing the condensing coils in the separator to facilitate the solvents to be separated and the water to drain through an outlet. Each vapor degreaser and still at the facility consists of an approximately 4-foot by 6-foot degreaser and a 6-foot still. Average operations include 500 lbs. of copper parts per hour. The vapor degreaser and still M184 is a large unit which was placed 5 feet below the surface of the manufacturing floor. Cement containment walls enclose the bottom of the vapor degreaser (Reference 12).

**DATES OF OPERATION:** The vapor degreaser and still M184 began operation in September of 1972 and presently continues to be operated.

**WASTES MANAGED:** Wastes managed at this unit have changed throughout the plant's operational history. From 1972 to December 1990, spent TCE was generated from vapor and degreasing operations. After December 1990, TCA was used in the vapor degreasing operation. From 1972 to 1979, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount or destination of wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co., Inc.; and Clayton Chemical. From 1979 to 1982, TCE wastes were transferred directly from vapor degreaser and still M184 into 55-gallon drums to be taken to SWMU Numbers 4, 6, or 31. From 1982 to 1990, TCE wastes were transferred from vapor degreaser and still M184 to vapor degreaser and still M487. The TCE wastes were then containerized in 55-gallon drums and transferred to one of two drum storage areas, SWMU Number 4 (1980 to 1985) or SWMU Number 31 (1979 to 1983). TCE wastes were also transferred from vapor degreaser and still M487 unit via 55-gallon barrels to the 1,000-gallon TCE waste storage tank (SWMU Number 6) in drum storage area 1 (1980 to 1985) or to its second location in the pretreatment/drum storage area (1985 to 1990). The resulting F001 wastestream, which is spent TCA/still bottoms, is handled under a contract with Safety-Kleen. Since 1990, the TCA still bottoms waste (F001), which is generated during the degreasing process, is transferred to vapor degreaser and still M487 for further moisture reduction. Vapor Degreaser Still M487 (new) receives all still bottoms from each of the four operating stills. Moisture content is reduced from 20 percent to 4 percent at the M487 (new) unit. The still bottoms are then transferred to TCA Storage Tank Number 6 (SWMU Number 7). The present TCA wastestream is depicted in Figure 7. The total generation rate of spent TCA and still bottoms from all vapor degreasers is 6,400 lbs. per month.

**RELEASE CONTROLS:** Release controls noted at the vapor degreaser and still M184 included a 6-inch cement containment wall in which the vapor degreaser is located. The system is totally enclosed, and the piping system conducts spent TCA to the vapor degreaser and still M487 (new).

**SWMU NUMBER:** 18 (continued)

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M184. On the day of the VSI, the vapor degreaser and still M184 was in operation. No spill areas were observed, and the degreaser and still were in good condition. No cracks were observed in the manufacturing building floor around the unit.

**MIGRATION PATHWAYS:** If a release were to occur from the M184 unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 12

**SWMU NUMBER:** 19

**SWMU NAME:** Vapor Degreaser and Still M185 (Former)

**SWMU DESCRIPTION:** Vapor degreaser and still M185 (former) operated directly south of the copper and aluminum tubing storage area near the west wall next to the boiler. The location of the M185 (former) unit is depicted on Figures 4 and 8 as SWMU Number 19. The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit were 9 feet 2 inches in length, 6 foot 1 inch in width and 6 foot in height. The storage tank was constructed of mild steel. The degreaser was a single-dip liquid vapor (LV) open-top machine manufactured by Baron Blakeslee. This unit was designed to remove grease from manufactured aluminum parts through solvent vapor water spray. Solvents were vaporized in the vapor zone. Aluminum parts were loaded into a mesh steel cage and are lowered into the vapor zone. The vapor was then sprayed over the aluminum parts at a low temperature. The low solvent spray temperature aided in vapor condensation. The vapor ran over the condensing separator, allowing the condensing coils in the separator to facilitate the solvents to be separated and the water to drain through an outlet (Reference 12).

**DATES OF OPERATION:** Vapor degreaser and still M185 (former) was installed in March of 1972 and operated through July 1972. In July 1972, the M185 unit was destroyed by fire. The unit was replaced by vapor degreaser and still M185 (new - location 1) in November 1973, which is listed as SWMU Number 20.

**WASTES MANAGED:** Wastes managed at vapor degreaser and still M185 (former) included spent TCE (F001). Generation rates were not recorded until Sundstrand Tubular Products filed the first RCRA Part A Application in 1980; therefore, no generation rates were available for the spent TCE (still bottoms) generated by this unit. In 1972, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount or destination of wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co.; and Clayton Chemical (Reference 16).

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M185 (former) included a 6-inch cement containment wall in which the vapor degreaser was located. No other release controls or secondary containment existed.

**RELEASE HISTORY:** The entire vapor degreaser and still M185 (former) was destroyed by fire, and no salvageable parts were reclaimed. F001 wastes were potentially released onto the concrete floor underneath the unit during the fire. The potential for absorption by the porous concrete floor is likely unless the temperature of the fire was sufficient to burn off the volatile waste materials.

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M185 (former), the primary migration pathway would have been, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER: 20**

**SWMU NAME:** Vapor Degreaser and Still M185 (New - Location 1)

**SWMU DESCRIPTION:** Vapor degreaser and still M185 (new - location 1) operated directly south of the copper and aluminum tubing storage area near the west wall next to the boiler. Vapor degreaser and still M185 (new - location 1) replaced vapor degreaser and still M185 (former) after it was destroyed by fire in July 1972. The location of units M185 (former) and unit M185 (new - location 1) are identical and are depicted on Figures 4 and 8 as SWMU Number 19 and SWMU Number 20.

The vapor degreaser and attached still are constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet in height. The storage tank is constructed of mild steel. The degreaser is a single dip liquid vapor (LV) open-top machine manufactured by Baron Blakeslee.

This unit is designed to remove grease from manufactured aluminum parts through solvent vapor and water spray. Aluminum parts are loaded into a mesh steel cage and are lowered into the solvent vapor zone. The vapor is then sprayed over the aluminum parts at a low temperature that aids in vapor condensation. The vapor runs over the condensing coils through the water separator, allowing the water and the solvents to be separated. The solvents remain in the piping system while the water drains into the still. The vapor degreaser is approximately 4 foot by 6 foot in width, and the still is approximately 6 foot in height. The vapor degreaser and still unit is placed approximately 5.5 feet below the surface of the manufacturing building floor. Cement containment walls enclose the bottom of the vapor degreaser. Average operations include approximately 500 lbs. of parts per hour.

The still bottom waste (F001), generated during the degreasing process, is transferred to the M487 unit for further moisture reduction. M487 receives all still bottom waste from each of the three operation stills (M184, M185 (new), and M587). The moisture content is reduced from 20 percent to 4 percent at the M487 unit. The still bottoms are then transferred to TCA storage tank number 6 (SWMU Number 9). The present TCA wastestream is depicted in Figure 8.

In 1976, vapor degreaser and still M185 (new - location 1) was transferred south of the aluminum tube cutting area (SWMU Number 20). The 10-foot by 7-foot concrete containment pit used to encompass the M185 (new - location 1) unit was backfilled with soil and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** Vapor degreaser and still M185 (new - location 1) was in operation from 1973 to 1976 when it was moved to its present location (SWMU Number 21).

**WASTES MANAGED:** Wastes managed at vapor degreaser and still M185 (new - location 1) included spent TCE (F001). Generation rates were not recorded until Sundstrand Tubular Products filed the first RCRA Part A Application in 1980; therefore, no generation rates were available for spent TCE. From 1972 to 1976, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount or destination of wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co., Inc.; and Clayton Chemical (Reference 16).

**RELEASE CONTROLS:** Release controls noted at the vapor degreaser and still M185 (new - location 1) included a 6-inch cement containment wall in which the unit was located. No other release controls or secondary containment are present.

**SWMU NUMBER: 20 (continued)**

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M185 (new - location 1). No visible stains or signs of release were observed at the former location.

**MIGRATION PATHWAYS:** If a release were to occur from the M185 (new - location 1) unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 21

**SWMU NAME:** Vapor Degreaser and Still M185 (New - Location 2)

**SWMU DESCRIPTION:** Vapor degreaser and still M185 (new - location 2) is presently south of the aluminum tube cutting area at the north end of the manufacturing building. The present location of the unit is depicted on Figures 4 and 8 as SWMU Number 21. The vapor degreaser and attached still are constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet one inch in width, and 6 feet in height. The storage tank is constructed out of mild steel. The degreaser is a single-dip liquid vapor (LV) open-top machine manufactured by Baron Blakeslee. This unit is designed to remove grease from manufactured aluminum parts through solvent vapor and water spray. Aluminum parts are loaded into a mesh steel cage and are lowered into the solvent vapor zone. The vapor is then sprayed over the aluminum parts at a low temperature that aids in vapor condensation. The vapor runs over the condensing coils through the water separator, allowing the water and the solvents to be separated. The solvents remain in the piping system while the water drains into the still. The vapor degreaser and still unit is placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. Cement containment walls enclose the bottom of the vapor degreaser. Average operations include approximately 500 lbs. of parts per hour.

Presently the still bottom waste (F001), generated during the degreasing process, is transferred to the vapor degreaser and still M487 (new) unit for further moisture reduction. The moisture content is reduced from 20 percent to 4 percent at the M487 unit (new). The still bottoms are then transferred to TCA storage tank number 6 (SWMU Number 7). The present TCA wastestream is depicted in Figure 7.

**DATES OF OPERATION:** Vapor degreaser and still M185 (new - location 2) has been in operation at its present location since 1976.

**WASTES MANAGED:** Wastes managed at vapor degreaser and still M185 (new - location 2) included spent TCE (from November 1976 to December 1990) generated from degreasing and distillation operations. From 1976 to 1979, TCE waste management practices were not recorded until Sundstrand Tubular Products filed the original RCRA Part A Application in 1980. During this time, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount or destination of wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co., Inc.; and Clayton Chemical. From 1980 to 1985, TCE wastes were transferred to vapor degreaser and still M487 (new) (SWMU Number 23) for further moisture reduction. M487 received all waste (still bottoms) from each of the four operating stills (M184, M185, M394, and M567). Moisture content was reduced from 20 percent to 4 percent at the M487 unit. The wastes were then transferred into 55-gallon drums. From 1985 to 1990, TCE wastes were transferred to vapor degreaser and still M487 (new) (SWMU Number 23) for further moisture reduction. These waste were then transferred via pipeline to the TCE waste storage tank number 1 (SWMU Number 6). From 1990 to the present, TCA wastes (still bottoms) have been transferred form the vapor degreaser and still M487 to the TCA Storage Tank Number 6 (SWMU Number 7). The TCA wastes are then transferred from the tank into a pump truck to be transported for recycling. The F001 waste is handled under a contract with Safety-Kleen. The generation rate of TCA waste from the four active vapor degreaser and still units combined is 6,400 lbs. per month.

**RELEASE CONTROLS:** Release controls noted at the vapor degreaser and still M185 (new - location 2) include a 6-inch cement containment wall in which the unit was located. The system is totally enclosed, and the piping system conducts spent TCA to the vapor degreaser and still M487. No other release controls or secondary containment are present.

**SWMU NUMBER:** 21 (continued)

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M185 (new - location 2). On the day of the VSI, no visible stains or signs of release were observed in the operation area.

**MIGRATION PATHWAYS:** If a release were to occur from the M185 (new - location 2) unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 13

**SWMU NUMBER: 22**

**SWMU NAME:** Vapor Degreaser and Still M487 (Former)

**SWMU DESCRIPTION:** Vapor degreaser and still M487 (former) operated north of the aqueous cleaning bath from 1979 through 1982. The location of the vapor degreaser and still M487 (former) is depicted on Figure 4 and 8 as SWMU Number 22. The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit were 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank was constructed of mild steel. The vapor degreaser and still were manufactured by Baron Blakeslee. This unit was designed to remove grease from manufactured aluminum and copper parts through solvent vapor and water spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still were placed approximately 5 foot 6 inches below the surface of the manufacturing building floor. The average operation of the unit was 500 lbs. of parts per hour.

In 1982, vapor degreaser and still M487 (former) was transferred southeast of the aluminum tube cutting area (SWMU Number 23). The 10-foot by 7-foot concrete containment pit used to encompass the vapor degreaser and still M487 (former) unit was backfilled with soil and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** Vapor degreaser and still M487 (former) was in operation from 1979 to 1982. In 1982, the unit was moved to a new location (SWMU Number 23).

**WASTES MANAGED:** TCE wastes generated at the M487 (former) unit were transferred into 55-gallon drums and stored at Drum Storage Area 1 (SWMU Number 4) (1980 to 1982), or drum storage area 3 (SWMU Number 31) from 1979 to 1982. The TCE wastes were handled under contract with Safety-Kleen. Generation rates were not recorded until 1980. After 1980, the combined total amount of TCE wastes claimed to be generated by active vapor degreaser and stills was 9,200 lbs. per year.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M487 (former) unit included a 6-inch cement containment wall in which the unit was located. No other release controls or secondary containment was present.

**RELEASE HISTORY:** There is no record or documentation of any release of material associated with vapor degreaser and still M487 (former).

**MIGRATION PATHWAYS:** If a release were to occur from the M487 (former) unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 23

**SWMU NAME:** Vapor Degreaser and Still M487 (New)

**SWMU DESCRIPTION:** Vapor degreaser and still M487 (new) is presently in the southeast corner of the aluminum cutters against the east wall of the manufacturing building. The present location of the vapor degreaser and still M487 is depicted on Figures 4 and 8 as SWMU Number 23.

The vapor degreaser and attached still are constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank is constructed out of mild steel. The unit was manufactured by Baron Blakeslee. This unit is designed to remove grease from manufactured aluminum and copper parts through solvent and vapor spray. Copper or aluminum parts are loaded into a mesh steel cage and are lowered into the solvent vapor zone. The vapor is then sprayed over the copper or aluminum parts at a low temperature that aids in vapor condensation. The vapor runs over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvent remains in the piping system while the water is drained into the still. The vapor degreaser and still is placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit is 500 lbs. of parts per hour.

The still bottom waste (F001), generated during the degreasing process at degreasing and still units M184 (new), M185 (new - location 2), M394 (former - location 3), and M567 are transferred to the M487 unit for further moisture reduction. The moisture content is reduced from 20 percent to 4 percent at the M487 unit. The still bottoms are then transferred to TCA storage tank number 6 (SWMU Number 7). The present TCA wastestream is depicted in Figure 7. During the VSI, the vapor degreaser and still M487 unit was inoperative. Spent TCA still bottoms were transferred to 55-gallon drums, moved to the pretreatment/drum storage area, and stored by the bulk chemical storage area (SWMU Number 4). The area was clean, in good condition, and no leakage or stains were observed during the VSI. Four 55-gallon drums were observed adjacent to the M487 (new) unit which contained the still bottom waste.

**DATES OF OPERATION:** Vapor degreaser and still M487 has been in operation at its present location since 1982. The M487 (former) unit was north of the aqueous cleaning bath from 1979 to 1982. The unit was moved to its present location in 1982.

**WASTES MANAGED:** Wastes managed at the M487 unit included spent TCE (from 1982 to December 1990) and spent TCA (from December 1990 to the present) generated from the degreasing and still bottom operations. From 1982 to 1985, TCE wastes (still bottoms) were transferred into 55-gallon drums to be stored at drum storage area 1, SWMU Number 4 (1982 to 1983) or drum storage area 3, SWMU Number 31 (1982 to 1983). Some of the 55-gallon drums were emptied into the 1,000-gallon TCE waste storage tank number 1 (SWMU Number 6). Since 1990, TCA wastes are directed to TCA storage tank number 6 (SWMU Number 7). The present TCA wastestream is depicted in Figure 7. The F001 waste is handled under a contract with Safety-Kleen. The generation rate from the four active units is 6,400 lbs. per month.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M487 (new) unit include: a 6-inch cement containment wall in which the unit is located. The system is totally enclosed, and the piping system conducts spent TCA to the M487 unit from the four operating vapor degreaser and distillation units.

**RELEASE HISTORY:** There is no record or documentation of any release of material associated with vapor degreaser and still M487 (new). On the day of the VSI, no visible stains or signs of release were observed at the operation area.

**SWMU NUMBER:** 23 (continued)

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M487 unit (new), the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 14

**SWMU NUMBER:** 24

**SWMU NAME:** Vapor Degreaser and Still M460 (Former - Location 1)

**SWMU DESCRIPTION:** Vapor degreaser and still M460 (former - location 1) was in operation north of the aqueous cleaning bath. The location of vapor degreaser and still M460 (former) is depicted on Figures 4 and 8 as SWMU Number 24.

The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank is constructed of mild steel. The vapor degreaser and still were manufactured by Baron Blakeslee.

The unit was designed to remove grease from manufactured aluminum and copper parts through solvent and vapor spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still was placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit is 500 lbs. of parts per hour.

In 1985, vapor degreaser and still M460 was transferred southeast of the aluminum tube cutting area against the south wall (SWMU Number 25). The 10-foot by 7-foot concrete containment pit used to encompass vapor degreaser and still M460 (former - location 1) unit was backfilled with soil and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** Vapor degreaser and still M460 (former) was in operation from 1979 to 1982. From 1982 to 1985, the unit was not operating, but remained at this location in storage. In 1985, the unit was moved to a new location (SWMU Number 25).

**WASTES MANAGED:** TCE wastes generated at the vapor degreaser and still M460 (former - location 1) unit were transferred into 55-gallon drums and stored at drum storage area 1, SWMU Number 4 (1979 to 1982) or drum storage area 3, SWMU Number 31 (1980 to 1982). The TCE wastes were handled under a contract with Safety-Kleen. Generation rates were not recorded until 1980. After 1980, the combined total for active vapor degreasers and stills was 9,200 lbs. per year.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M460 (former - location 1) unit included a 6-inch cement containment wall in which the vapor degreaser was located.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the vapor degreaser and still M460 (former - location 1).

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M460 (former - location 1) unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 25

**SWMU NAME:** Vapor Degreaser and Still M460 (Former - Location 2)

**SWMU DESCRIPTION:** Vapor degreaser and still M460 (former - location 2) last operated in the southeast corner of the aluminum cutters against the south wall. The location of the vapor degreaser and still M460 (former - location 2) unit is depicted on Figures 4 and 8 as SWMU Number 25.

The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit were 9 feet 2 inches, 6 feet 1 inch in width and 6 feet above ground in height. The storage tank was constructed of mild steel. The vapor degreaser and still were manufactured by Baron Blakeslee. This unit was designed to remove grease from manufactured aluminum and copper parts through solvent vapor and water spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still was placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit was 500 lbs. of parts per hour.

**DATES OF OPERATION:** The vapor degreaser and still M460 (former - location 2) was in operation from 1985 to 1987. In 1987, the M460 (former - location 2) unit was dismantled and shipped to the MHT facility in Diawogiac, Michigan.

**WASTES MANAGED:** Wastes managed at the vapor degreaser and still M460 (former - location 2) unit included spent TCE (F001) that was generated from degreasing operations which were generated at a rate of 9,200 lbs. per year from 1985 to 1987. TCE wastes were piped to the waste FIN oil tank number 1 (SWMU Number 6).

**RELEASE CONTROLS:** Release controls at the M460 (former - location 2) degreaser and still included a 6-inch cement containment wall in which the vapor degreaser is located. The system was totally enclosed, and the piping system conducted spent TCE to vapor degreaser and still M487.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M460 (former - location 2).

**MIGRATION PATHWAYS:** If a release were to occur from the M460 (former - location 2) unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** Not pictured

**SWMU NUMBER:** 26

**SWMU NAME:** Vapor Degreaser and Still M567

**SWMU DESCRIPTION:** Vapor degreaser and still M567 is in the south central portion of the manufacturing building. The M567 unit, northeast of the stock storage area, is depicted on Figures 4 and 8 as SWMU Number 26.

The M567 unit is the largest vapor degreaser and distillation unit at the Modine facility. It has a capacity of 4,000 gallons. The unit is approximately 10 feet in width and 50 feet in length. The unit is situated 5 feet 6 inches below the floor of the manufacturing building. Cement containment walls enclose the bottom of the vapor degreaser. The attached still and the degreaser are constructed of type 304 stainless steel. The degreaser is a two dip liquid vapor (LV) enclosed monorail machine. Standard operation includes dipping the sprays into the dirty solvent in the boiling sump to remove the worst soils. Parts are then carried into the vapor to rinse briefly before dipping into the clean rinse sump. After the parts have soaked for a period of time, they are brought up into the vapor zone for a final rinse by the condensing vapors. Parts are sufficiently heated in the vapor to promote flash drying as they are removed. The conveyor speed is adjustable within preset limits to prevent excess solvent from leaving the machine. Solvent capacity of the degreaser is 3,800 gallons. At rated capacity, the machine will consume 1,370 lbs./hr. of low-pressure steam. The still bottoms waste (F001), which is generated by the M567 unit, is transferred to still M487 for further moisture reduction. On the day of the VSI, no visible signs of the release were observed at the operation area.

**DATES OF OPERATION:** Vapor degreaser and still M567 was installed in 1987 and presently continues in operation.

**WASTES MANAGED:** Wastes managed at vapor degreaser and still M567 included spent TCE (from 1987 to December 1990) and spent TCA (from December 1990 to the present) generated from the degreasing and distillation operations. From 1987 to December 1990, TCE wastes were transferred via pipeline from vapor degreaser and still M567 to vapor degreaser and still M487 (new) for moisture reduction. TCE wastes were then transported from the M487 (new) unit in 55-gallon drums to the (TCE waste) waste FIN oil storage tank number 1, SWMU Number 6, or stored in the pretreatment/drum storage area. Since 1990, TCA wastes have been directed to the TCA Storage Tank Number 6 (SWMU Number 7). The present TCA wastestream is depicted in Figure 7. The F001 waste is handled under a contract with Safety-Kleen. The generation rate from the three active units is 6,400 lbs. per month.

**RELEASE CONTROLS:** Release controls noted at the vapor degreaser and still M567 included a 6-inch cement containment wall in which the vapor degreaser is located. The system is totally enclosed, and the piping system conducts spent TCA to the vapor degreaser and still M567. No other release controls or secondary containment are present.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M567. On the day of the VSI, no visible stains or signs of release were observed in the operation area.

**MIGRATION PATHWAYS:** If a release were to occur from the M567 unit, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 15

**SWMU NUMBER:** 27

**SWMU NAME:** Vapor Degreaser and Still M394 (Former - Location 1)

**SWMU DESCRIPTION:** Vapor degreaser and still M394 (former - location 1) operated in the area presently occupied by the aqueous cleaning bath. The location of the vapor degreaser and still M394 (former - location 1) are depicted on Figures 4 and 8 as SWMU Number 27.

The vapor degreaser and still M394 (former - location 1) is a liquid vapor (LV) degreaser. The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank is constructed of mild steel. The vapor degreaser and still were manufactured by the Detrex Corporation. The unit was designed to remove grease from manufactured aluminum and copper parts through solvent and vapor spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still was placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit was 300 lbs. of parts per hour.

In 1980, vapor degreaser and still M394 (former - location 1) was transferred east of the paint booths in the core assembly area (SWMU Number 28). The 10 feet by 7 feet concrete containment pit used to encompass the vapor degreaser and still M394 (former - location 1) unit was backfilled with soil, and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** Vapor degreaser and still M394 (former - location 1) was at the present location of the aqueous cleaning bath from November 1977 through 1980. In 1980, the vapor degreaser and still M394 (former - location 1) unit was relocated directly east of the paint booths and remained in operation there until 1982.

**WASTES MANAGED:** Wastes managed at the vapor degreaser and still M394 (former - Location 1) unit included spent TCE (F001) that was generated from degreasing operations. From 1977 to 1980, TCE wastes were stored at SWMU Numbers 4, 6, and 31. Although specific records and dates of the total amount or destination of wastes were not available, three companies were identified as potential recipients of the waste: Rollins Environmental Services, Inc.; Waste Research and Reclamation Co., Inc.; and Clayton Chemical. TCE generation rate was 9,200 lbs. per year.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M394 (former - Location 1) included a 6-inch cement containment wall in which the vapor degreaser was located. No other release controls or secondary containment were present at this location.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M394 (former - location 1).

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M394 (former - location 1) unit, the primary migration pathways would be to air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 28

**SWMU NAME:** Vapor Degreaser and Still M394 (Former - Location 2)

**SWMU DESCRIPTION:** Vapor degreaser and still M394 (former - location 2) operated directly east of the paint booths in the core assembly area. The location of the vapor degreaser and still M394 (former - location 2) is depicted on Figures 4 and 8 as SWMU Number 28.

The vapor degreaser and still M394 (former - location 2) is a liquid vapor (LV) degreaser. The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank is constructed of mild steel. The vapor degreaser and still were manufactured by the Detrex Corporation. The unit was designed to remove grease from manufactured aluminum and copper parts through solvent and vapor spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still was placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit was 300 lbs. of parts per hour (References 12 and 16).

In 1988, vapor degreaser and still M394 (former - location 2) was moved northeast of the cooling tower. The 10-feet by 7-feet cement containment pit that enclosed the vapor degreaser and still M394 (former- location 2) unit was backfilled with soil, and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** In 1980, the vapor degreaser and still M394 (former - location 2) unit was directly east of the paint booths and remained in operation from 1980 to 1982. In 1982, the unit was moved northeast of the cooling tower where it remained until its retirement in June 1988. In June 1988, vapor degreaser and still M394 (former - location 2) was shipped from the facility and is not in operation at the MHT facility in Diawogiac, Michigan.

**WASTES MANAGED:** Wastes managed at the vapor degreaser and still M394 (former - location 2) unit included spent TCE still bottoms (F001) that was generated during degreasing operations. TCE wastes were transferred into 55-gallon drums and transported to the (TCE waste) waste FIN oil storage tank number 1 (SWMU Number 6). The F001 wastes were loaded form the TCE waste storage tank number 1 into a pump truck under a contract handled by Safety-Kleen. The generation rate was 9,200 lbs. per year.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M394 (former - location 2) included a 6-inch cement containment wall in which the vapor degreaser was located. No other release controls or secondary containment were present at this location.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M394 (former - location 2).

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M394 (former - location 2) unit, the primary migration pathways would be to air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER: 29**

**SWMU NAME:** Vapor Degreaser and Still M394 (Former - Location 3)

**SWMU DESCRIPTION:** Vapor degreaser and still M394 (former - location 3) operated approximately 30 feet northeast of the cooling tower near the aluminum sheet cutter. The location of the vapor degreaser and still M394 (former - location 3) is depicted on Figures 4 and 8 as SWMU Number 29.

The vapor degreaser and still M394 (former - location 3) is a liquid vapor (LV) degreaser. The vapor degreaser and attached still were constructed of type 304 stainless steel. The overall dimensions of the unit are 9 feet 2 inches in length, 6 feet 1 inch in width, and 6 feet above ground in height. The storage tank is constructed of mild steel. The vapor degreaser and still were manufactured by the Detrex Corporation. The unit was designed to remove grease from manufactured aluminum and copper parts through solvent and vapor spray. Copper or aluminum parts were loaded into a mesh steel cage and were lowered into the solvent vapor zone. The vapor was then sprayed over the copper or aluminum parts at a low temperature that aided in vapor condensation. The vapor ran over the condensing coils through the water separator, allowing the water and solvents to be separated. The solvents remained in the piping system while the water drained into the still. The vapor degreaser and still was placed approximately 5 feet 6 inches below the surface of the manufacturing building floor. The average operation of the unit was 300 lbs. of parts per hour (References 12 and 17).

In 1988, vapor degreaser and still M394 (former - location 3) was moved to the MHT facility in Diawogiac, Michigan. The 10-feet by 7-feet cement containment pit that enclosed the vapor degreaser and still M394 (former - location 3) unit was backfilled with soil, and was capped with cement flush with the manufacturing building floor.

**DATES OF OPERATION:** In 1982, the vapor degreaser and still M394 (former - location 3) unit was moved northeast of the tower where it remained until its retirement in June 1988. In June 1988, vapor degreaser and still M394 (former - location 1) was shipped from the facility and is not in operation at the MHT facility in Diawogiac, Michigan.

**WASTES MANAGED:** Wastes managed at the vapor degreaser and still M394 (former - location 3) unit included spent TCE (F001) that was generated during degreasing operations. The combined F001 wastes from all active degreasers and stills were generated at a rate of 9,200 lbs. per year. The TCE still bottom wastes (F001) generated during the degreasing operation were transferred to the vapor degreaser and still M487 (new) unit for further moisture reduction. The moisture content was reduced by 20 percent to 4 percent at the M487 (new) unit. The still bottoms were transferred via 55-gallon drums to waste FIN oil (TCE waste storage) tank, SWMU Number 6. The F001 wastes were then loaded from the TCE waste storage tank into a pump truck under a contract handled by Safety-Kleen. The total generation rate was 9,200 lbs. per month.

**RELEASE CONTROLS:** Release controls at the vapor degreaser and still M394 (former - location 3) included a 6-inch cement containment wall in which the vapor degreaser was located. The system was totally enclosed, and the piping system conducted spent TCA to vapor degreaser and still M497 (new). No other release controls or secondary containment were present at this location.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with vapor degreaser and still M394 (former - location 3).

**MIGRATION PATHWAYS:** If a release were to occur from the vapor degreaser and still M394 (former - location 3) unit, the primary migration pathways would be to air, soil, groundwater, and surface water, in decreasing order of likelihood.

**SWMU NUMBER:** 29 (continued)

**PHOTOGRAPH NO.:** Not pictured.

**SWMU NUMBER:** 30

**SWMU NAME:** Two 2,000-Gallon Storage Tanks

**SWMU DESCRIPTION:** The Two 2,000-Gallon Storage Tanks are directly west of the vapor degreaser and still M567 unit (SWMU Number 26). These two above-ground tanks are beside one another, running east to west, and are identical in construction. They have horizontal capsule-shaped tanks with welded seams, and each has a capacity of 2,000 gallons. The location of the two tanks are depicted on Figure 4 as SWMU Number 30.

The tanks were installed in 1983. The two tanks are used during maintenance and cleaning of the M567 unit. All contents of the vapor degreaser and still M567 unit (approximately 3,800 to 4,000 gallons total) are transferred to the two tanks during maintenance operations (Reference 12).

**DATES OF OPERATION:** The Two 2,000-Gallon Storage Tanks were installed in 1983 and are still currently in service.

**WASTES MANAGED:** Wastes stored during maintenance operations included TCE still bottoms (from 1983 to 1990), TCA still bottoms (1900 to present), degreasing solvents, rinse waters, and boiler water. Maintenance requires the two tanks be used approximately once a month.

**RELEASE CONTROLS:** The tanks are suspended on two cement supports overlying a non-bermed cement slab floor. No other release controls or secondary containment are associated with the two 2,000-gallon storage tanks.

**RELEASE HISTORY:** There is no record or documentation of any release of materials from the two 2,000-gallon storage tanks.

**MIGRATION PATHWAYS:** If a release were to occur from the Two 2,000-Gallon Storage Tanks, the primary migration pathways, in decreasing order of likelihood, would be air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 16

**SWMU NUMBER:** 31

**SWMU NAME:** Drum Storage Area Number 3

**SWMU DESCRIPTION:** Drum storage area number 3 was directly against the wall which is presently between vapor degreaser and still M567 and the aluminum sheet cutter in the southern portion of the manufacturing building addition. The former location of the drum storage area is depicted in Figure 4 as SWMU Number 31 (Reference 12).

The drum storage area number 3 was constructed in 1979. The storage area consisted of a base rock and clay mixture. The gravel pad was 25 feet by 50 feet in size and was used to store 55-gallon drums of TCE wastes.

**DATES OF OPERATION:** drum storage area number 3 was in operation from 1979 through 1983. In 1983, Modine expanded the manufacturing building, and the storage area was removed for the new addition (Figure 4).

**WASTES MANAGED:** Wastes managed at the drum storage area number 3 remained constant throughout its operation history. Waste TCE (F001) and waste oil (D098) generated from the degreasing operations were stored at this location in 55-gallon drums. No documentation was available for the total amount of wastes handled during the operational life of this SWMU.

**RELEASE CONTROLS:** Release controls at this storage area consist of a cement slab on a base rock and clay mixture. No other release controls existed at this location. No roof was present to protect the drums from precipitation.

**RELEASE HISTORY:** A release from approximately 15 corroded drums containing TCE is known to have occurred at this storage area. As part of an Environmental Site Assessment (ESA) conducted by LAW Environmental, Inc., five borings were drilled in the area believed to be the location of the release. The purpose of the ESA was to sample subsurface soils in areas 1 and 2 for the presence of TCE. Samples for drum storage area number 3 (listed as area number 1 in the study) were collected through the cement floor of the 1983 building addition (Reference 7).

Five soil borings were drilled in Area Number 1: three borings from beneath the plant floor (HA-1, 2 and 3); and two from beneath the floor of the present vapor degreaser and still M567 degreasing machine pit (SWMU Number 26), 5 feet 6 inches below the plant floor (HA-4 and 5). Sample locations are depicted on Figure 3 in Appendix E. Analytical results of the sampling event are summarized in Table 2 (Reference 7).

**MIGRATION PATHWAYS:** The primary migration pathways for contaminants released from drum storage area number 3 were to soil, air, surface water, and groundwater, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 17

**SWMU NUMBER:** 32

**SWMU NAME:** Pretreatment/Drum Storage Area

**SWMU DESCRIPTION:** The pretreatment/drum storage area is located in the center portion of the raw materials storage area. The area consists of a temporary storage area on the cement floor next to the TCA waste storage tank (SWMU Number 7) and portions of the 32-barrel rack that is also utilized for bulk process chemical storage (AOC A). On the day of the VSI, all waste drums were properly labeled and were segregated for process chemical drums. The location of the pretreatment/drum storage area is depicted on Figure 4 as SWMU Number 32 (Reference 12).

**DATES OF OPERATION:** The pretreatment/drum storage area was constructed in 1985 and is presently in service.

**WASTES MANAGED:** Wastes managed include 55-gallon drums of waste oil, D098 (in conjunction with SWMU Number 6, 8,838 lbs. per month) waste TCA, F001, (in conjunction with SWMU Number 7, 6,400 lbs. per month), and Paint Wastes, D001, (220 lbs. per month). Drums are emptied directly into large capacity tanks or are transferred directly to pump trucks operated by Safety-Kleen (paint wastes, waste oils and waste TCA), or Liquid Reclaimers (waste oils).

**RELEASE CONTROLS:** Release controls at the pretreatment/drum storage area include a reinforced concrete floor with curbs, forming a leak-tight containment area. MHT representatives stated no cracks had developed or had to be repaired prior to the application of the chemical resistant coating. The curbed area was designed to hold 110 percent of the largest tank in the room, or 5,830 gallons. The SWMU is enclosed in a concrete-walled and roof-covered area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the pretreatment/drum storage area.

**MIGRATION PATHWAYS:** If a release were to occur from the pretreatment/drum storage area, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 18

**SWMU NUMBER:** 33

**SWMU NAME:** Non-Hazardous Waste Receptacle

**SWMU DESCRIPTION:** The non-hazardous waste receptacle is outside on the south side of the manufacturing building. It is approximately 15 feet by 30 feet in size. The receptacle is on a concrete pad.

The non-hazardous waste receptacle is constructed out of welded steel and has a hinged cover for waste deposition. The receptacle was purchased from Chemical Waste Management. The receptacle is designed for non-hazardous solid wastes such as office waste, paper, and packaging wastes. The receptacle is operated and maintained by Miller Waste Management of Camdenton, Missouri. On the day of the VSI, the receptacle was in good condition and was covered. The location of the non-hazardous waste receptacle is depicted on Figure 4 as SWMU Number 33 (Reference 12).

**DATES OF OPERATION:** Operation of the non-hazardous waste receptacle has existed at this area from 1983 to the present.

**WASTES MANAGED:** Wastes managed include non-hazardous wastes such as office wastes, packaging wastes, and miscellaneous paper wastes.

**RELEASE CONTROLS:** The receptacle is covered by a hinged steel lid to protect materials from precipitation. The receptacle is on a concrete pad that directs surface water runoff directly south into a drainageway leading southwest from the site.

**RELEASE HISTORY:** There is no documented release of materials associated with hazardous wastes at this receptacle; however, during the VSI, Modine personnel did admit that a potential for release of waste material did exist from "oil-dry", which is used to clean up hydraulic oil leaks, that is discarded with general non-hazardous wastes.

**MIGRATION PATHWAYS:** If a release were to occur from the non-hazardous waste receptacle, the primary migration pathway would likely occur from surface water runoff the drainageway leading southwest of the site.

**PHOTOGRAPH NO.:** 19

**SWMU NUMBER:** 34

**SWMU NAME:** Scrap Metal Storage Bins

**SWMU DESCRIPTION:** The scrap metal storage bins are directly north of the truck-loading dock on the west side of the manufacturing building. The scrap metal bins are grey poly-plastic bins 4 foot by 4 foot in size that are placed on wooden trolleys. The location of the scrap metal bins is depicted on Figure 4 as SWMU Number 34.

The scrap metal bins include all copper and aluminum scrap metals produced during the manufacturing process. The number of bins varies proportionately with production rates. On the day of the VSI, there were four bins at the bin area. Modine officials stated that up to twenty bins could accumulate in this area.

**DATES OF OPERATION:** The scrap metal bins have been used since production started in 1967, but the previous areas for storage either could not be located or were presently covered by subsequent building additions. The present area has been used since 1983.

**WASTES MANAGED:** Wastes managed at the scrap metal bin area include all scrap aluminum and copper. Scrap copper is transported to the MHT copper mill in Dowagiac, Michigan, for recycling. In the past, scrap copper and aluminum have been sold to Grossman Iron and Steel in St. Louis, Missouri.

**RELEASE CONTROLS:** No release controls or secondary containment are in use at this location.

**RELEASE HISTORY:** There is no record or documentation of any release of materials from the scrap metal bins. Due to precipitation, however, some release of metals has most likely occurred at this location.

**MIGRATION PATHWAYS:** If a release were to occur from the scrap metal bins, the primary pathways, in decreasing order of likelihood, would be soil, surface water, groundwater, and air.

**PHOTOGRAPH NO.:** 20

**SWMU NUMBER:** 35

**SWMU NAME:** Fire Training Area

**SWMU DESCRIPTION:** The fire training area consists of a section of ground southwest of the Modine Heat Transfer manufacturing building in the adjacent 40-acre field that has been designated for the Camdenton County Fire Department to conduct fire training. Fire training exercises include transporting 4-feet by 4-feet wooden pallets to the fire training area and piling them on the ground. Successive exercises involve the ignition and extinguishing of the pallets in training. Fire training occurs approximately four times a year on a quarterly basis. The location of the fire training area is depicted in Figure 2 as SWMU Number 35.

**DATES OF OPERATION:** The fire training area has been in use from 1988 to the present.

**WASTES MANAGED:** Wastes managed at this area include 4-feet by 4-feet wooden pallets. The ash from the burning of pallets is left at the area and is not managed.

**RELEASE CONTROLS:** Release controls at the fire training area consist of visual monitoring by the Camdenton County Fire Department to ensure control of the burn area. No other release controls or secondary containment exist at the fire training area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the fire training area.

**MIGRATION PATHWAYS:** If a release were to occur from fire training area, the primary migration pathways would be air, soil, surface water and groundwater, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured

**AOC NUMBER:** A

**AOC NAME:** Raw Materials Storage Area

**AOC DESCRIPTION:** The raw materials storage area is at the north end of the pretreatment/drum storage area, north of the pretreatment wastewater system (SWMU Number 3). The area consists of the one waste FIN oil tank number 1 (1,000-gallon), process FIN oil storage tanks number 2 and 3 (5,300-gallon), one process TCA storage tank number 4 (5,300-gallon), one process FIN oil distribution tank number 5 (2,500-gallon), and a bulk chemical storage area (three metal storage shelves and approximately 32 barrel racks), which also include some waste drums (SWMU Number 32).

**DATES OF OPERATION:** The raw materials storage area was constructed in 1985 in conjunction with the pretreatment wastewater system (SWMU Number 3) and is presently still in service.

**MATERIALS MANAGED:** Materials managed at the raw materials storage area include: process FIN oil, process TCA, bulk chemicals for general maintenance, aqueous cleaning bath and the pretreatment wastewater system (SWMU Number 3) and is presently still in service.

**RELEASE CONTROLS:** The raw materials storage area has a reinforced concrete floor with curbs, forming a leak-tight containment area. MHT representatives stated no cracks had developed or had to be repaired prior to the application of the chemical resistant coating. The curbed area was designed to hold 110 percent of the largest tank in the room, or 5,830 gallons. The SWMU is enclosed in a concrete-walled and roof-covered area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the raw materials storage area.

**MIGRATION PATHWAYS:** If a release were to occur from the raw materials storage area, the primary migration pathways would be air, soil, groundwater, and surface water, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** 21

**AOC NUMBER: B**

**AOC NAME: Pallet Storage Area**

**AOC DESCRIPTION:** The pallet storage area is 150 feet west of the truck loading dock and directly south of the employee parking lot. The location of the pallet storage area is depicted on Figure 4 as AOC B.

The pallet storage area consists of a chain link fence and is secured by two gates before exiting the property. The area lies in the vacant field due west of the manufacturing building. The pallets are laid directly on the ground with no containment or cover.

**DATES OF OPERATION:** The pallet storage area has been in operation from 1983 until the present.

**MATERIALS MANAGED:** Wastes managed at the pallet storage area consist of large 4-foot by 4-foot wooden pallets shipped by trucks with raw materials used in the manufactured process. From 1983 to 1988, the pallets were stored at the pallet storage area for pick up at a public landfill by various contractors including Miller Waste Management of Camdenton, Missouri. Beginning in 1988, the pallets were used by the Camdenton County Fire Department on a quarterly basis for fire training exercise (SWMU Number 35).

**RELEASE CONTROLS:** No release controls or secondary containment exist in the pallet storage area.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the pallet storage area.

**MIGRATION PATHWAYS:** If a release were to occur from the pallet storage area, the primary migration pathways would be soil, surface water, groundwater, and air, in decreasing order of likelihood.

**PHOTOGRAPH NO.:** Not pictured.

**AOC NUMBER:** C

**AOC NAME:** Tool Crib/Maintenance Area

**AOC DESCRIPTION:** The tool crib/maintenance area is in the northeast corner of the manufacturing building southeast of the copper brazing area. The tool crib houses all tools utilized at the MHT facility, is approximately 15 foot by 20 foot, and is enclosed by a steel cage. The area includes shelving, cabinets, and tool boxes. The maintenance area consists of two rooms approximately 15 foot by 25 foot and 20 foot by 35 foot in size. These areas contain general use items, including paints, greases/lubricants, and general cleaning supplies. Flammable materials are kept inside a 6-foot by 2-foot steel fire cabinet. Other materials are stored in 5-gallon buckets, or canisters on shelves, and/or the cement floor. The location of the tool crib/maintenance area is depicted in Figure 4 as AOC C.

**DATES OF OPERATION:** The tool crib/maintenance area has been in operation from 1987 and is presently active.

**MATERIALS MANAGED:** Wastes managed at the tool crib/maintenance area include the following general use items: paints, paint thinners, greases/lubricants and general cleaning supplies. Paint thinners, paints and paint wastes are combined in the paint waste stored in SWMU Number 32, in 55-gallon drums in the raw materials storage area barrel rack. Lubricants and greases are disposed in the waste oil tank FIN (SWMU Number 6). General cleaning supplies (ie., paper towels, old maps, etc...) are disposed in the non-hazardous waste receptacle, SWMU Number 33.

Paint wastes and waste oils are combined inside a Safety-Kleen pump truck and constitute a portion of the fuel blending program along with solvent waste. Wash and rinse water from general cleaning activities are released into the pretreatment wastewater system (SWMU Number 3).

Wastes generated from maintenance activities are disposed with general trash, combined with waste oils for the fuel blending program, or released into the pretreatment waste water system.

**RELEASE CONTROLS:** The only release control noted at the tool crib/maintenance area included the fire cabinet for flammable material storage. No other release controls or secondary containment are present at AOC C.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with the tool crib/maintenance area. No visible stains or signs of release were observed at the operation area.

**MIGRATION PATHWAYS:** If a release were to occur from the tool crib/maintenance area, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

**PHOTOGRAPH NO.:** 22

**AOC NUMBER:** D

**AOC NAME:** Paint Line

**AOC DESCRIPTION:** The paint line is in the west-central portion of the manufacturing building, directly north of the loading dock area. The location of the paint line is depicted on Figure 4 as AOC D.

The paint line is utilized to paint assorted cooling/heating units manufactured at the plant. All parts are painted with a non-hazardous "carbon-black" color. This unit consists of two paint booths and a paint dryer. These areas are enclosed with metal sides and have air venting systems. Paint wastes are generated during the flushing of paint tips thinner applicators and line cleaning operations. Additional information regarding the paint line was requested from MHT on March 18, 1992, but the information has not yet been received.

**DATES OF OPERATION:** Paint lines have been operated since 1967. The present booth has been in operation since 1983.

**MATERIALS MANAGED:** Waste paint-related material (D001), is generated from cleaning of paint line equipment at the facility. This waste is handled under contract with Safety-Kleen. The generation rate is 220 lbs. per month. The paint filters, which are considered by MHT to be non-hazardous, are landfilled under contract with Safety-Kleen. All D001 wastes are removed from the paint line area and are stored in 55-gallon drums in the pretreatment/drum storage area (SWMU Number 32).

**RELEASE CONTROLS:** Carbon black paint booths are equipped with air ventilation systems. No other release controls are associated with the paint line.

**RELEASE HISTORY:** There is no record or documentation of any release of materials associated with paint line operations. No visible stains or signs of release were observed at the operation area.

**MIGRATION PATHWAYS:** If a release were to occur from the paint line, the primary migration pathways would be, in decreasing order of likelihood, air, soil, groundwater, and surface water.

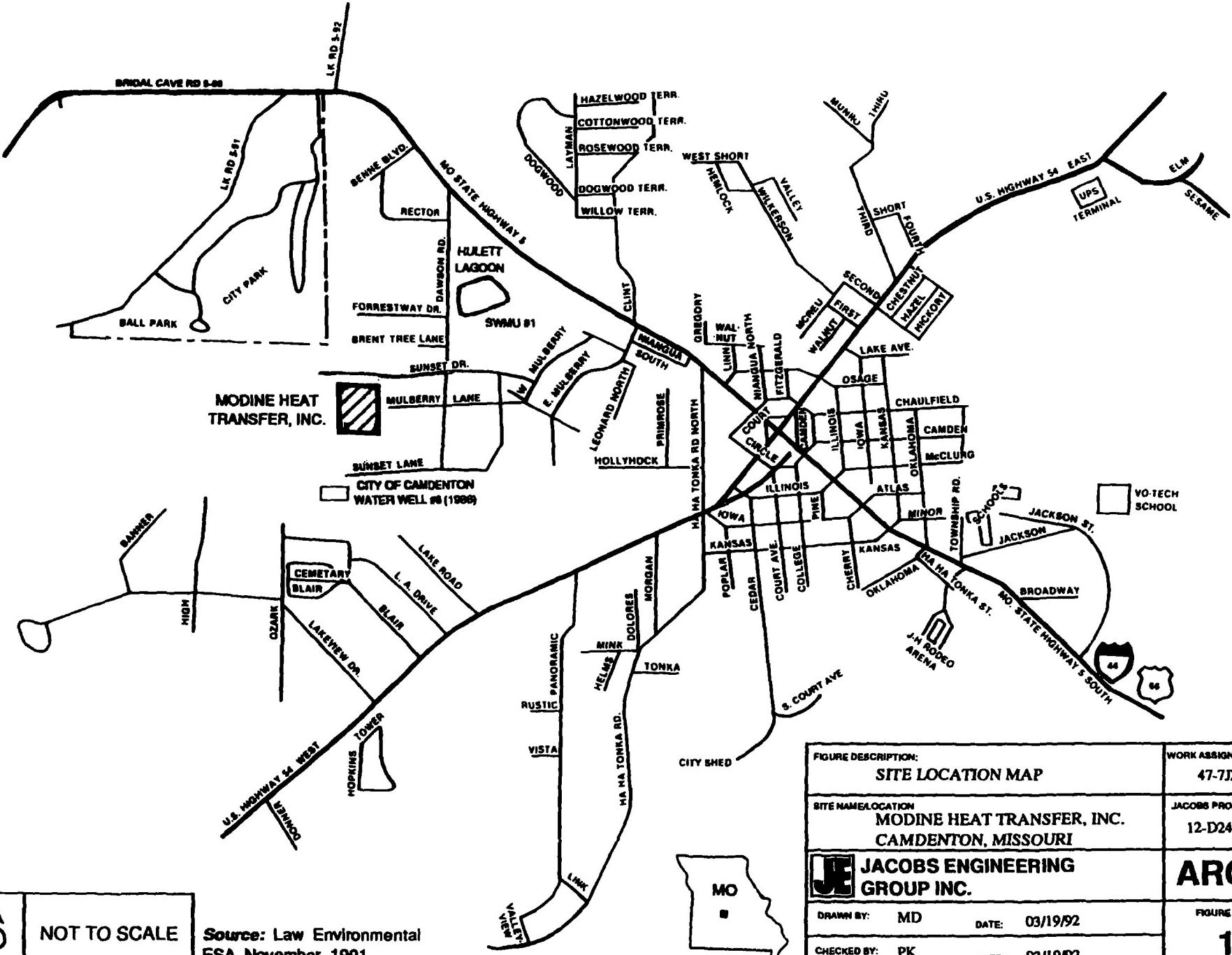
**PHOTOGRAPH NO.:** 23

## REFERENCES

1. Water Utilities Superintendent, Camdenton, Missouri, personal communication, January 3, 1992.
2. Vandike, J.E., 1984, Geologic Reconnaissance Map with Structural Contours of Lake of the Ozarks Area, Missouri, Missouri Department of Natural Resources Division of Geology and Land Survey OFM-84-183-GI.
3. Whitfield, K.E., 1984, Surficial Geology of Green Bay Terrace Quadrangle Lake of the Ozarks Area Missouri, Missouri Department of Natural Resources Division of Geology and Land Survey OFM-84-174-GI.
4. Harvey, E.J., Skelton, J., and Miller, D.E., 1983, Hydrology of Carbonate Terrain - Niangua, Osage Fork, and Grandglaize Basins, Missouri, Missouri Department of Natural Resources Division of Geology and Land Survey Water Resources Report No. 35.
5. Vandike, J.E., Whitfield, J.W., Meier, D.H., Endicott, C., 1985, An Engineering Geologic Approach to Evaluation Groundwater and Surface-Water Contamination Potential at Lake of the Ozarks, Missouri. Missouri Department of Natural Resources Division of Geology and Land Survey Water Resources OFR-85-26-EG.
6. U.S. Department of Agriculture, February 1991, Soil Resource Inventory of Camden County, Missouri, Washington D.C.
7. LAW Environmental, Inc., November 1991, Environmental Site Assessment for the Modine Heat Transfer, Inc., Post Office Box 636 Sunset Drive, Camdenton, Missouri.
8. United States National Climatological Data Center, Climatological Summary for Camdenton, Missouri, Weather Station #23031212.
9. Missouri Department of Conservation, Rare and Endangered Species of Missouri, 1991.
10. Graphical Exposure Modeling System (GEMS), USEPA/Office Toxic Substances Population.
11. United States Census Bureau Data Library, personal communication March 23, 1992.
12. Visual Site Inspection Field Logbook, March 4, 1992, Jacobs Engineering Group Inc.
13. Closure Plan, Sundstrand Tubular Products Inc., December, 1990.
14. Compliance Evaluation Inspection, Missouri Department of Natural Resources, February, 1991.
15. Kent L. Hixon, Camdenton City Administrator, letter to Paul Kieler, Jacobs Engineering Group Inc., dated March 23, 1992.
16. Don Mans, Plant Engineer, Modine Heat Transfer, Inc., personal communication August 6, 1992.
17. Don Mans, Plant Engineer, Modine Heat Transfer, Inc., personal communication August 7, 1992.

18. Don Mans, Plant Engineer, Modine Heat Transfer, Inc., facsimile transmission August 7, 1992.
19. Don Mans, Plant Engineer, Modine Heat Transfer, Inc., facsimile transmission August 19, 1992.

## **FIGURES**



Source: Law Environmental  
ESA, November, 1991



NOT TO SCALE

0287-22-001

FIGURE DESCRIPTION: <b>SITE LOCATION MAP</b>	WORK ASSIGNMENT NO. 47-7JZ
SITE NAME/LOCATION <b>MODINE HEAT TRANSFER, INC.</b> <b>CAMDENTON, MISSOURI</b>	JACOBS PROJECT NO. 12-D247-22
<b>JACOBSEN ENGINEERING GROUP INC.</b>	<b>ARCS</b>
DRAWN BY: MD	DATE: 03/19/92
CHECKED BY: PK	DATE: 03/19/92

FIGURE NO.  
1

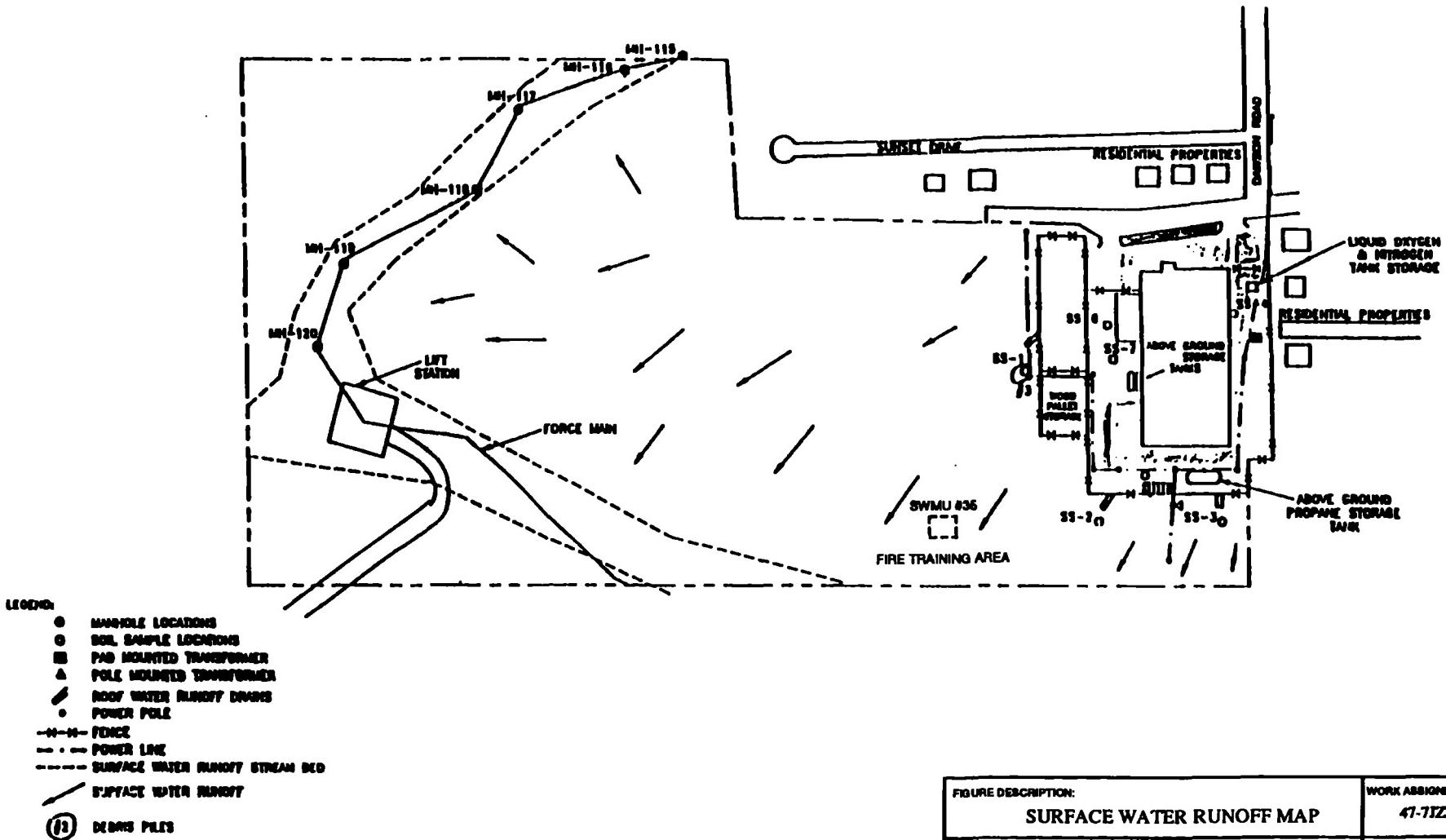


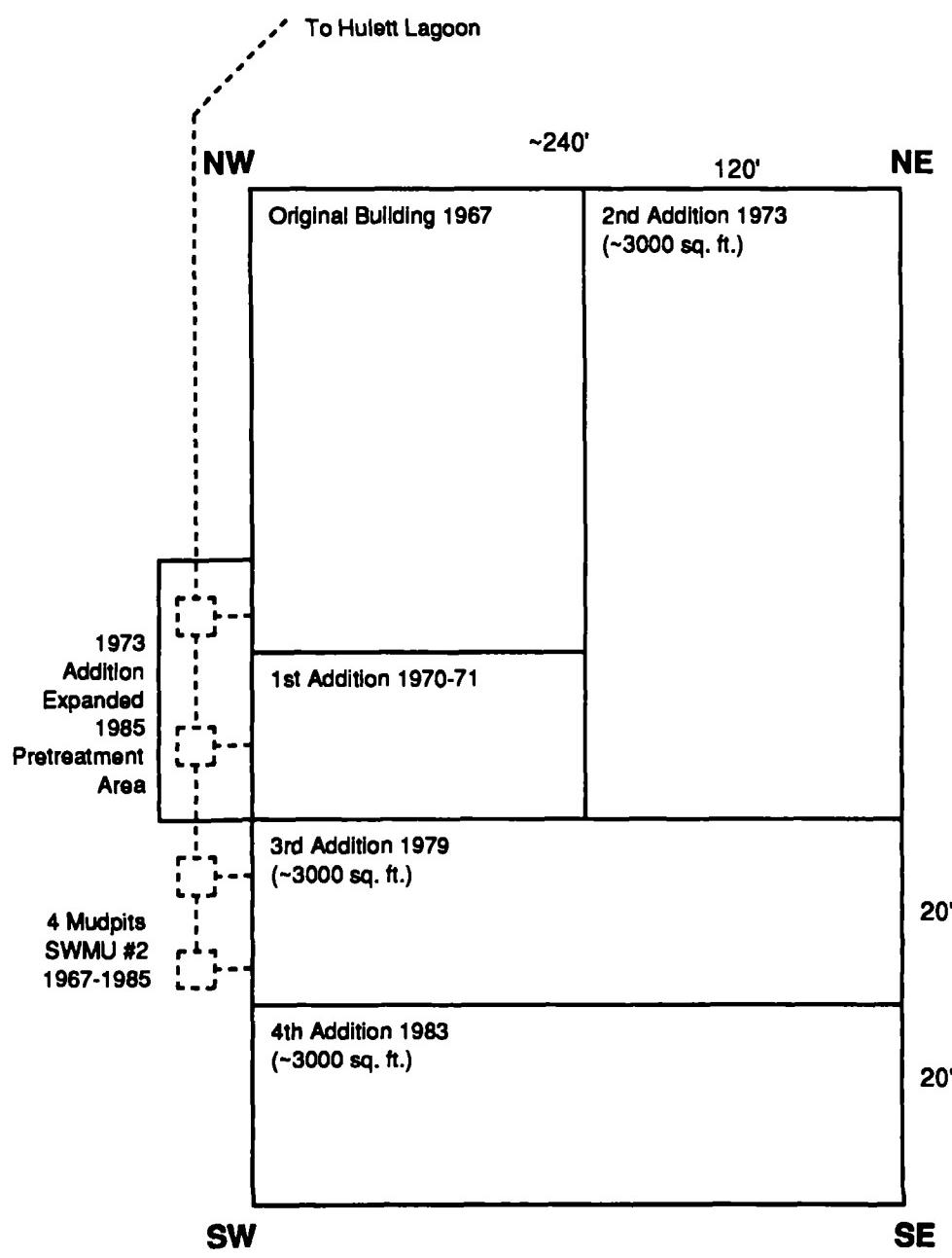
FIGURE DESCRIPTION: SURFACE WATER RUNOFF MAP	WORK ASSIGNMENT NO. 47-7JZ
SITE NAME/LOCATION MODINE HEAT TRANSFER, INC. CAMDENTON, MISSOURI	JACBS PROJECT NO. 12-D247-22
JACBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD	DATE: 03/19/92
CHECKED BY: PK	DATE: 03/19/92
	FIGURE NO. <b>2</b>



NOT TO SCALE

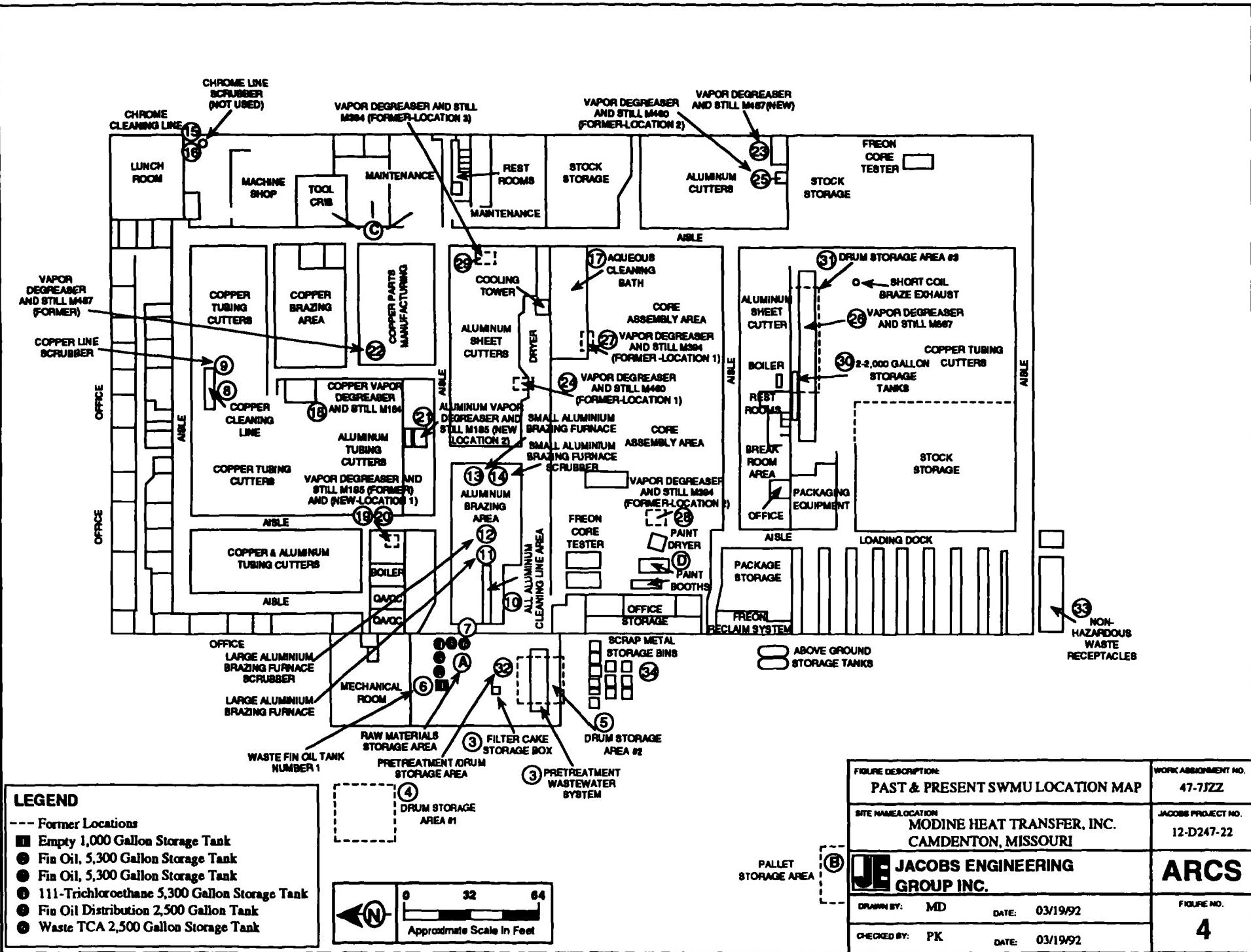
0247-22-004

Source: Modine Discharge Application



NOT TO SCALE

FIGURE DESCRIPTION: <b>HISTORICAL BUILDING ADDITIONS</b>		WORK ASSIGNMENT NO. <b>47-7JZZ</b>
SITE NAME/LOCATION <b>MODINE HEAT TRANSFER, INC.</b> <b>CAMDENTON, MISSOURI</b>		JACOBS PROJECT NO. <b>12-D247-22</b>
<b>JACOBS ENGINEERING GROUP INC.</b>		<b>ARCS</b>
DRAWN BY:	MD	DATE: 03/19/92
CHECKED BY:	PK	DATE: 03/19/92
		FIGURE NO. <b>3</b>



**LEGEND**

- Former Locations

  - Empty 1,000 Gallon Storage Tank
  - Fin Oil, 5,300 Gallon Storage Tank
  - Fin Oil, 5,300 Gallon Storage Tank
  - ① 111-Trichloroethane 5,300 Gallon Storage Tank
  - Fin Oil Distribution 2,500 Gallon Tank
  - Waste TCA 2,500 Gallon Storage Tank



0      32      64  
  
 Approximate Scale in Feet

**FIGURE DESCRIPTION:**  
**PAST & PRESENT SWMU LOCATION MAP**

WORK ASSIGNMENT NO.

**SITE NAME/LOCATION**

**MODINE HEAT TRANSFER, INC.**

**CAMDENTON, MISSOURI**

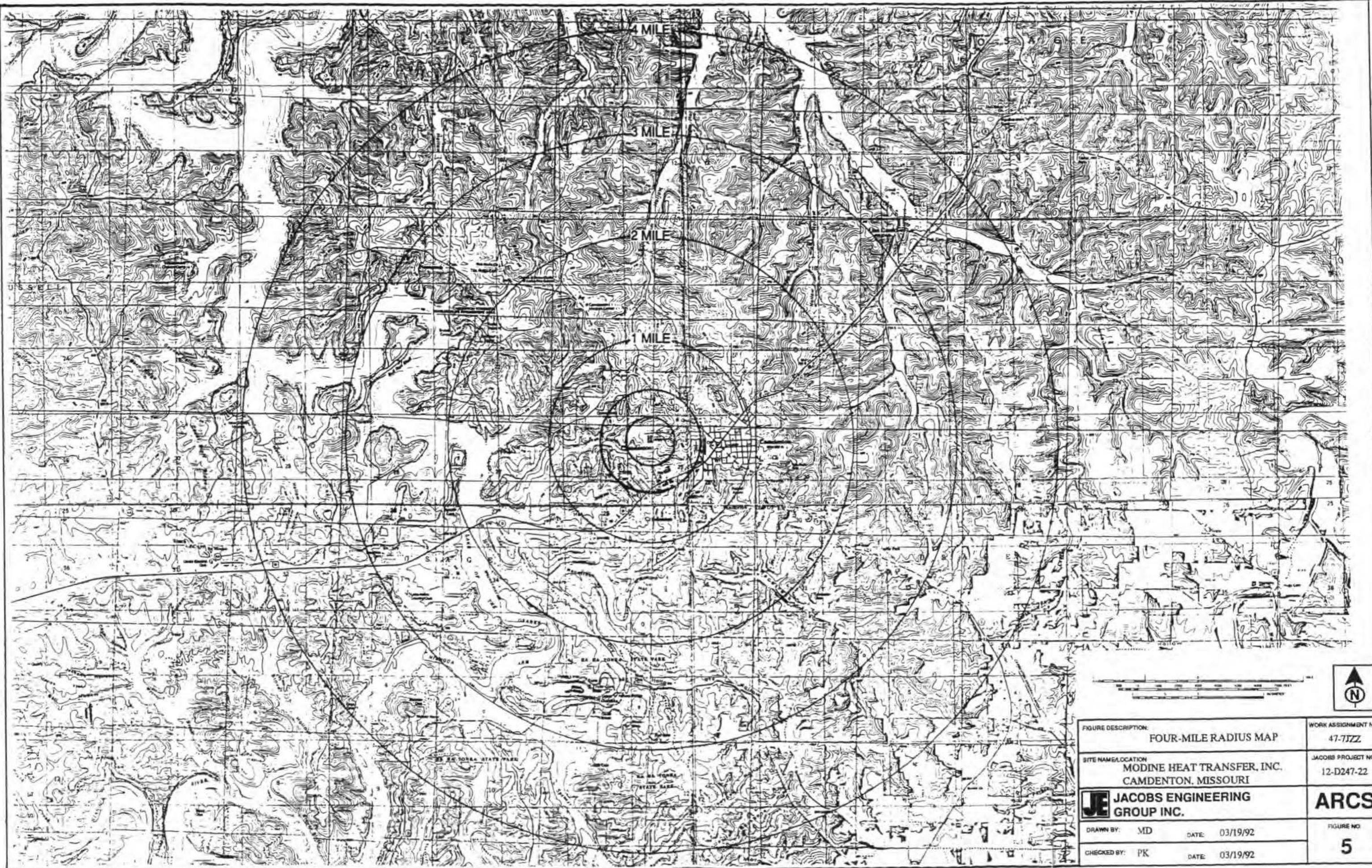
JACOBS PROJECT NO.  
12-D247-22

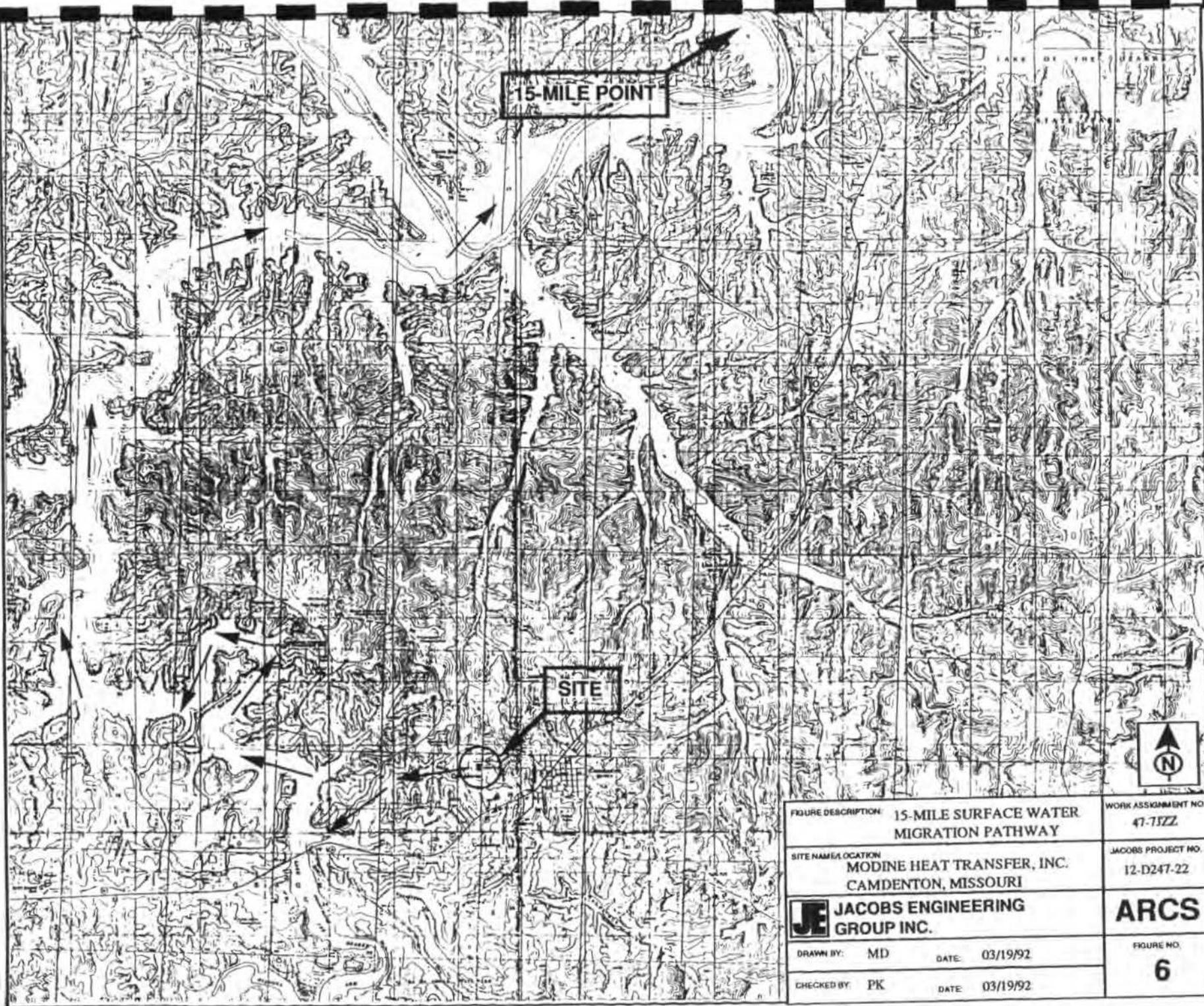
**JACOBS ENGINEERING  
GROUP INC.**

ABCs

DRAWN BY:	MD	DATE:	03/19/92
CHECKED BY:	PK	DATE:	03/19/92

FIGURE NO.





15-MILE POINT

SITE



FIGURE DESCRIPTION: 15-MILE SURFACE WATER  
MIGRATION PATHWAY

WORK ASSIGNMENT NO.  
47-7522

SITE NAME/LOCATION  
MODINE HEAT TRANSFER, INC.  
CAMDEN, MISSOURI

JACOBS PROJECT NO.  
12-D247-22

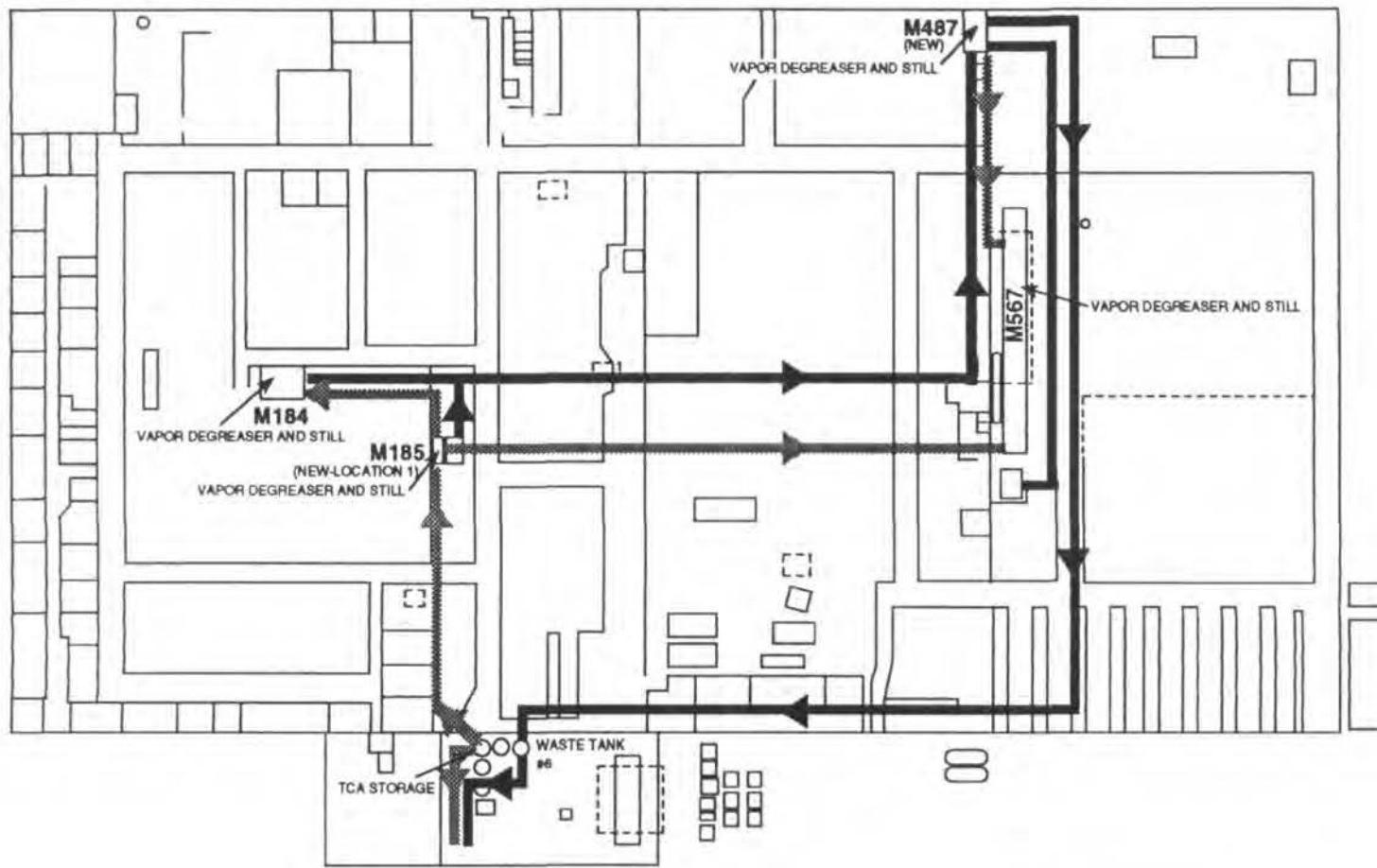
**JE** JACOBS ENGINEERING  
GROUP INC.

**ARCS**

DRAWN BY: MD DATE: 03/19/92

FIGURE NO.  
**6**

CHECKED BY: PK DATE: 03/19/92



**LEGEND**

- New, Reclaimed TCA
- Waste Piping

D247-22-F9&9

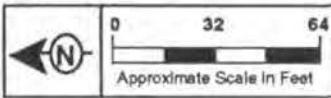
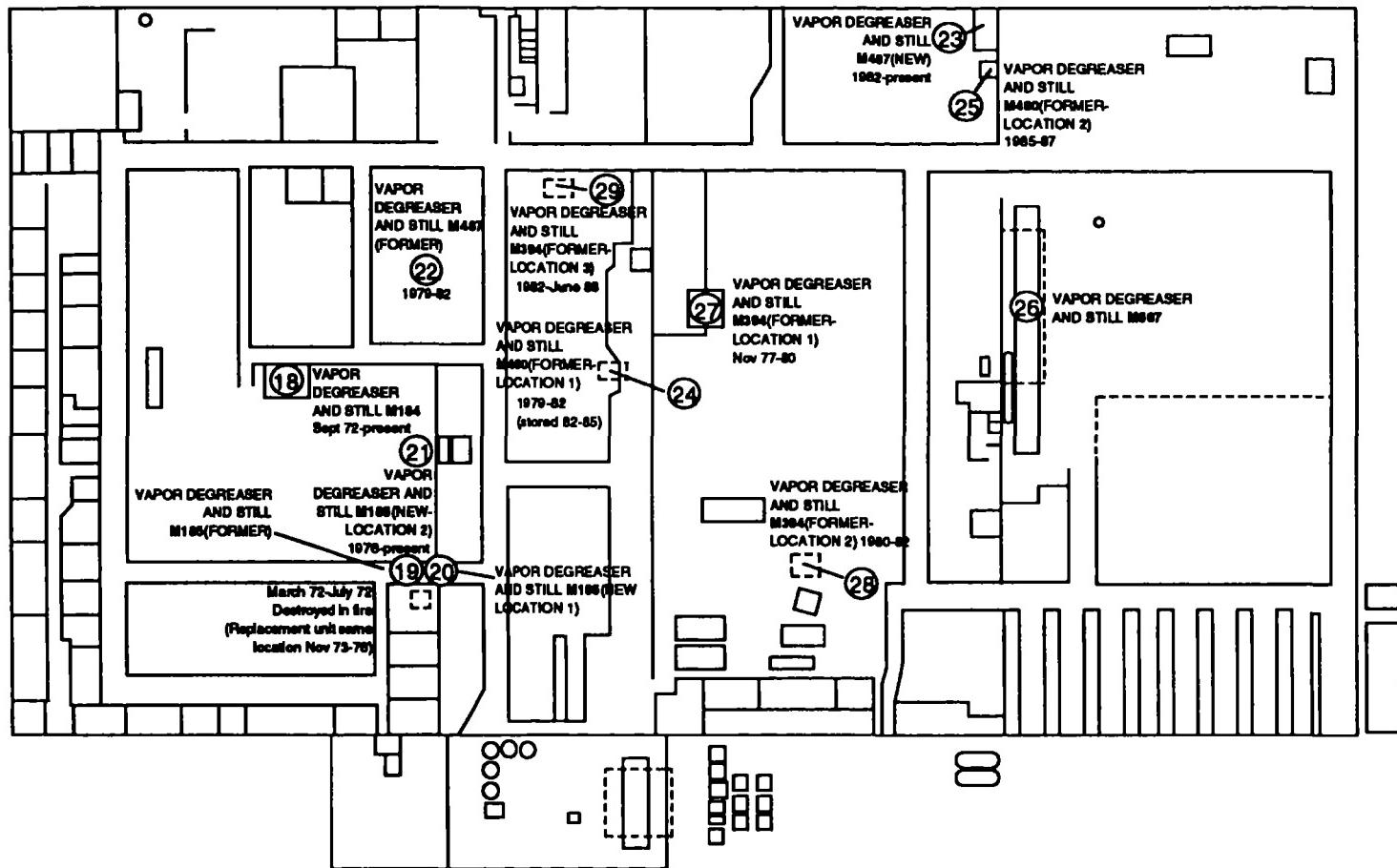


FIGURE DESCRIPTION: PRESENT TCA WASTESTREAM	WORK ASSIGNMENT NO. 47-7JZZ
SITE NAME/LOCATION MODINE HEAT TRANSFER, INC. CAMDENON, MISSOURI	JACOBS PROJECT NO. 12-D247-22
<b>JE</b> JACOBS ENGINEERING GROUP INC.	<b>ARCS</b>
DRAWN BY: MD	DATE: 03/19/92
CHECKED BY: PK	DATE: 03/19/92

7



Note: M394 & M460 are now at  
Modine Heat Transfer, Inc. Diawogiac, MI.

D247-22-FB&G



FIGURE DESCRIPTION: HISTORICAL VAPOR DEGREASER & STILL LOCATON MAP	WORK ASSIGNMENT NO. 47-7JZZ
SITE NAME/LOCATION MODINE HEAT TRANSFER, INC. CAMDENTON, MISSOURI	JACOBS PROJECT NO. 12-D247-22
<b>JAC</b> JACOBS ENGINEERING GROUP INC.	<b>ARCS</b>

DRAWN BY: MD	DATE: 09/25/92
CHECKED BY: PK	DATE: 09/25/92

FIGURE NO.  
**8**

## **TABLES**

**TABLE 1**  
**SWMU/AOC IDENTIFICATION SUMMARY**

SWMU/AOC Number	Description	Years of Operation	Wastes Managed	EPA Waste Codes
1	Hulett Lagoon	1961-1989	Wastewater - copper and aluminum cleaning lines, paint wastes, waste oil	F001, F006, F007, F009, F017, D098, D001
2	Mudpits	1967-1986	Wastewater - copper and aluminum cleaning lines, paint wastes, waste oil	F001, F006, F007, F009, F017, D098, D001
3	Pretreatment Wastewater System/ Filter Press	1986-present	Used pretreatment filtered cake	F006
4	Drum Storage Area Number 1	1980-1983	Waste TCE, paint wastes and filters, waste oil	F001, F003, D098
5	Drum Storage Area Number 2	1983-1985	Waste TCE, waste oil, paint waste	F001, D098, F003
6	Waste FIN Oil Storage Tank Number 1	1983-present	Waste oil, TCE	D098, F001
7	TCA Waste Storage Tank Number 6	1985-present	TCA	F001
8	Copper Cleaning Line	1967-present	Alkaline cleaner, chromic acid rinse water	F006
9	Copper Cleaning Line Scrubber	1971-present	Chromic, nitric, citric rinse water	F006
10	Aluminum Cleaning Line	1967-present	Alkaline cleaner, chromic acid rinse water	F006
11	Large Aluminum Brazing Furnace	1971-1989	Chromic acid vapor	----
12	Large Aluminum Brazing Furnace Scrubber	1971-1989	Chromic acid rinse water	F006

**TABLE 1 (continued)**  
**SWMU/AOC IDENTIFICATION SUMMARY**

<b>SWMU/AOC Number</b>	<b>Description</b>	<b>Years of Operation</b>	<b>Wastes Managed</b>	<b>EPA Waste Codes</b>
13	Small Aluminum Brazing Furnace	1971-1985	Chromic acid vapor	----
14	Small Aluminum Brazing Furnace Scrubber	1973-1985	Chromic acid rinse water and pretreatment chromic acid vapors	F006
15	Chrome Cleaning Line	1973-1985	Chromic acid rinse water	F006
16	Chrome Cleaning Line Scrubber	1973-1985	Chromic acid rinse water	F006
17	Aqueous Cleaning Bath	1986-present	Alkaline cleaner, rinse water and waste oil	F006, D098
18	Vapor Degreaser and Still M184	1972-present	TCE, TCA	F001
19	Vapor Degreaser and Still M185 (Former)	1972-1972	TCE, TCA	F001
20	Vapor Degreaser and Still M185 (New-Location 1)	1973-1976	TCE	F001
21	Vapor Degreaser and Still M185 (New Location 2)	1976-present	TCE, TCA	F001
22	Vapor Degreaser and Still M487 (Former)	1979-1982	TCE	F001
23	Vapor Degreaser and Still M487 (New)	1982-present	TCE, TCA	F001
24	Vapor Degreaser and Still M460 (Former-Location 1)	1982-1987	TCE	F001
25	Vapor Degreaser and Still M460 (Former-Location 2)	1980-1982	TCE	F001
26	Vapor Degreaser and Still M567	1987-present	TCE, TCA	F001

**TABLE 1 (continued)**  
**SWMU/AOC IDENTIFICATION SUMMARY**

SWMU/AOC Number	Description	Years of Operation	Wastes Managed	EPA Waste Codes
27	Vapor Degreaser and Still M394 (Former-Location 1)	1979-1982	TCE	F001
28	Vapor Degreaser and Still M394 (Former-Location 2)	1980-1982	TCE	F001
29	Vapor Degreaser and Still M394 (Former-Location 3)	1982-1988	TCE, TCA	F001
30	Two 2,000 Gallon Storage Tanks	1983-present	TCE, TCA, rinse waters, degreaser solvents	F001
31	Drum Storage Area Number 3	1979-1983	TCE waste oil	F001, D098
32	Pretreatment/Drum Storage Area	1986-present	Process oil, TCE, TCA, bulk chemicals, Paint wastes	F001, D098, F003
33	Non-Hazardous Waste Receptacle	1983-present	General refuse	not applicable
34	Scrap Metal Storage Bins	unknown-present	Scrap copper and aluminum	not applicable
35	Fire Training Area	1989-present	Materials Manager	not applicable
AOC Number	Description	Years of Operation	Materials Managed	EPA Wastes Codes
A	Raw Materials Storage Area	1985-present	Process FIN Oil	not applicable
B	Pallet Storage Area	1983-present	Wooden Pallets	not applicable
C	Tool/Crib Maintenance Area	1967-present	Paint thinner, general cleaning chemicals, paint	not applicable
D	Paint Line	1967-present	Paints, paint related materials, paint filter	not applicable

TABLE 2

**LAW ENVIRONMENTAL SITE ASSESSMENT ANALYTICAL RESULTS SUMMARY**  
**AREA Number 1 - SWMU NUMBER 21**

Location	HA-1	HA-2	HA-3	HA-4	HA-5
Depth (ft.)	2.0-4.0	4.0-4.3	0.0-2.0	0.0-0.75	0.0-2.0
Compounds ( $\mu\text{g}/\text{kg}$ )					
1,1,Dichloroethane	--	--	4.1	--	ND
1,2,Dichloroethane	--	--	--	--	420
Chloroform	1.8	--	--	--	83
1,1,1-Trichloroethane	550	14	18	1.8	200,000
Trichloroethene	3000	29	10	--	780
Tetrachloroethene	36	--	--	--	130
Vinyl Chloride	--	--	--	--	27
Trichlorofluoromethane	--	--	--	--	11
Methylene Chloride	--	--	--	--	610
trans-1,2-Dichloroethene	--	--	--	--	16
1,1,2-Trichloroethane	--	--	--	--	27

## AREA Number 2 - SWMU Number 6

Location	B-1	B-2	B-3	B-4
Depth (ft.)	2.0-4.0	2.0-4.3	2.0-4.25	4.0-8.0
Compounds ( $\mu\text{g}/\text{kg}$ )				
Methylene Chloride	8.4	4.8	--	--
1,1,-Dichloroethane	6.2	--	--	--
1,1,1-Trichloroethane	160	1.2	5.9	--
Trichloroethene	61	--	--	--
Tetrachloroethene	5.8	--	--	--
Vinyl Chloride	--	--	--	78
trans-1,2-Dichloroethene	--	--	--	12

TABLE 3

## Wells Within 4-Mile Radius of Modine Heat Transfer, Inc.

Well Location			Number of Wells
Section	Township	Range	
1	38N	17W	3
3	38N	17W	4
5	38N	17W	2
6	38N	17W	2
7	38N	17W	7
8	38N	17W	1
9	38N	17W	2
12	38N	17W	2
13	38N	17W	1
14	38N	17W	1
15	38N	17W	1
16	38N	16W	4
18	38N	16W	1
19	38N	16W	5
20	38N	16W	4
21	38N	16W	4
22	38N	16W	6
24	38N	16W	1
27	38N	16W	6
28	38N	16W	8
29	38N	16W	3
31	38N	16W	3
33	37N	17W	3
34	37N	17W	5
16	37N	17W	6

**TABLE 3****Wells Within 4-Mile Radius of Modine Heat Transfer, Inc.**

Well Location			Number of Wells
Section	Township	Range	
17	37N	17W	3
20	37N	17W	2
31	37N	17W	2
32	37N	17W	4
33	37N	17W	1
1	37N	17W	1
3	37N	17W	7
4	37N	17W	4
5	37N	17W	1
6	37N	17W	2
7	37N	17W	1
9	37N	17W	1
19	37N	17W	1
20	37N	17W	1
21	37N	17W	1
22	37N	17W	2
23	37N	17W	1
24	37N	17W	4

## **APPENDICES**

## **APPENDIX A**

**1980 PART A APPLICATION,  
1983 REVISED PART A APPLICATION AND  
RCRA TECHNICAL REVIEW**

## Part A, Permit Process --- Internal Checklist

ID Number MD 12-1437351 Firm Name Sundstrand Tubular Products

<u>Refer to Form No:</u>	<u>PHASE ONE</u>	<u>Indicate by your initials:</u>	<u>Valid Prmg Date?</u>
	<u>Interim Regulatory Requirements</u>	<u>Yes</u>	<u>No</u>
1	T/S/D Facility? (If No, return to respondent.)	✓	—
3	Form 1 received?	✓	—
1	Form 3 received?	✓	—
1 & 3	Postmarked on or before November 19, 1980?	✓	—
3	Date of operation entered?	✓	—
3	Date of operation on or before November 19, 1980?	✓	—
Notif. record "	Notifier?	✓	—
	Notified on or before August 18, 1980?	✓	—
1	Form 1, XIII B signed?	✓	—
3	Form 3, IX B Signed?	✓	✗

(If all ten items above are initialed in the Yes column, generate Interim Status Acknowledgement and indicate the trigger date here: DEC 17 1980)PHASE TWO

- 1 Unsure if regulated or non-regulated? — ✓
- 3 New facility? — —
- 1 & 3 Core items missing? If Yes, indicate which items:  
Facility name \_\_\_\_; location \_\_\_\_; mail address \_\_\_\_; operator info \_\_\_\_;  
certification \_\_\_\_; process info \_\_\_\_; waste info \_\_\_\_; owner \_\_\_\_; signs \_\_\_\_.

PHASE THREE

- 1 & 3 Non-core items missing? If Yes, indicate which items:  
Maps \_\_\_\_; photos \_\_\_\_; drawings \_\_\_\_; lat/long \_\_\_\_.

Other observations and comments:

DATE SENT BACK 5/1

DATE RETURNED \_\_\_\_\_

Received Date Stamp

NOV 13 1980

(Stamp forms also)

FORM  
1  
GENERALU.S. ENVIRONMENTAL PROTECTION AGENCY  
**GENERAL INFORMATION**  
Consolidated Permits Program  
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F M O D D 2 4 3 9 3 5 1

## GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete Items II through IV if no label has been provided. Refer the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

## LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY

VI. MAILING ADDRESS

PLEASE PLACE LABEL IN THIS SPACE

## II. POLLUTANT CHARACTERISTICS

**INSTRUCTIONS:** Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X'			SPECIFIC QUESTIONS	MARK 'X'		
	YES	NO	FORM ATTACHED		YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
	40	41	42		43	44	45

## III. NAME OF FACILITY

1 SKIP SUNDSTRAND TUBULAR PRODUCTS, INC.

## IV. FACILITY CONTACT

A. NAME &amp; TITLE (last, first, &amp; title)

B. PHONE (area code &amp; no.)

2 MANS DONAVON PLANT ENGINEER 314 346 5693

## V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 BOX 636

B. CITY OR TOWN

C. STATE D. ZIP CODE

4 CAMDEN

MO 65020

## VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 SUNSET DRIVE

B. COUNTY NAME

CAMDEN

NOV 13 1980

C. CITY OR TOWN

D. STATE E. ZIP CODE

F. COUNTY CODE  
(if known)

6 CAMDEN

MO 65020

FORM 3  
U  
RCRA  
**EPA**

U.S. ENVIRONMENTAL PROTECTION AGENCY  
**HAZARDOUS WASTE PERMIT APPLICATION**  
Consolidated Permit Program  
(This information is required under Section 3008 of RCRA.)

I. EPA I.D. NUMBER

F MD4262439351

**FOR OFFICIAL USE ONLY**

APPLICATION APPROVED	DATE RECEIVED (yr. mo. & day)

COMMENTS

**II. FIRST OR REVISED APPLICATION**

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

**A. FIRST APPLICATION** (place an "X" below and provide the appropriate date)

1. EXISTING FACILITY (See Instructions for definition of "existing" facility.  
Complete item below.)

2. NEW FACILITY (Complete item below.)

8      6 3 0 7 01      FOR EXISTING FACILITIES. PROVIDE THE DATE (yr., mo., & day)  
11      74 75 76 77 78      OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED  
(use the boxes to the left)

8      6 3 0 7 01      FOR NEW FACILITIES  
11      74 75 76 77 78      PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS  
EXPECTED TO BEGIN

**B. REVISED APPLICATION** (place an "X" below and complete Item I above)

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

**III. PROCESSES - CODES AND DESIGN CAPACITIES**

**A. PROCESS CODE** - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

**B. PROCESS DESIGN CAPACITY** - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.  
2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PRO-CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS	PRO-CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
<b>Storage:</b>			<b>Treatment:</b>		
CONTAINER (barrel, drum, etc.)	501	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY
TANK	502	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
WASTE FILE	503	CUBIC YARDS OR CUBIC METERS	INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR
SURFACE IMPOUNDMENT	504	GALLONS OR LITERS	OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY
<b>Dispose:</b>					
INJECTION WELL	079	GALLONS OR LITERS			
LANDFILL	080	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER			
LAND APPLICATION	081	ACRES OR HECTARES			
OCEAN DISPOSAL	082	GALLONS PER DAY OR LITERS PER DAY			
SURFACE IMPOUNDMENT	083	GALLONS OR LITERS			
<b>UNIT OF MEASURE</b>	<b>UNIT OF MEASURE CODE</b>	<b>UNIT OF MEASURE</b>	<b>UNIT OF MEASURE</b>	<b>UNIT OF MEASURE CODE</b>	<b>UNIT OF MEASURE</b>
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	G
GALLONS PER DAY	U	LITERS PER HOUR	M		

**EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below):** A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C		DUP		DATE																
R E B E N C J Z	A. PRO-CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY				FOR OFFICIAL USE ONLY				N U M B E R	A. PRO-CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY				FOR OFFICIAL USE ONLY				
		1. AMOUNT (specify)		2. UNIT OF MEASURE (enter code)		1. AMOUNT (specify)		2. UNIT OF MEASURE (enter code)				1. AMOUNT (specify)		2. UNIT OF MEASURE (enter code)		1. AMOUNT (specify)		2. UNIT OF MEASURE (enter code)		
06 - 10 10		17	18	19	20	21	22	23	24	16 - 18 10	5	17	18	19	20	21	22	23	24	
X-1	S 0 2	600		G							5									
X-2	T 0 3	20		E							6									
1	S 0 2	1000		G							7									
2	T 0 1	100		U							8									
3	S 0 1	2200		Z							9									
4				G							10									
		10 - 10 10		11	12	13	14	15	16											

Continued from page 2.

NOTE: Photocopy this page before continuing if you have more than 26 wastes to list.

Form 3510-3 Rev OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)											
W	M	D	D	O	O						
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

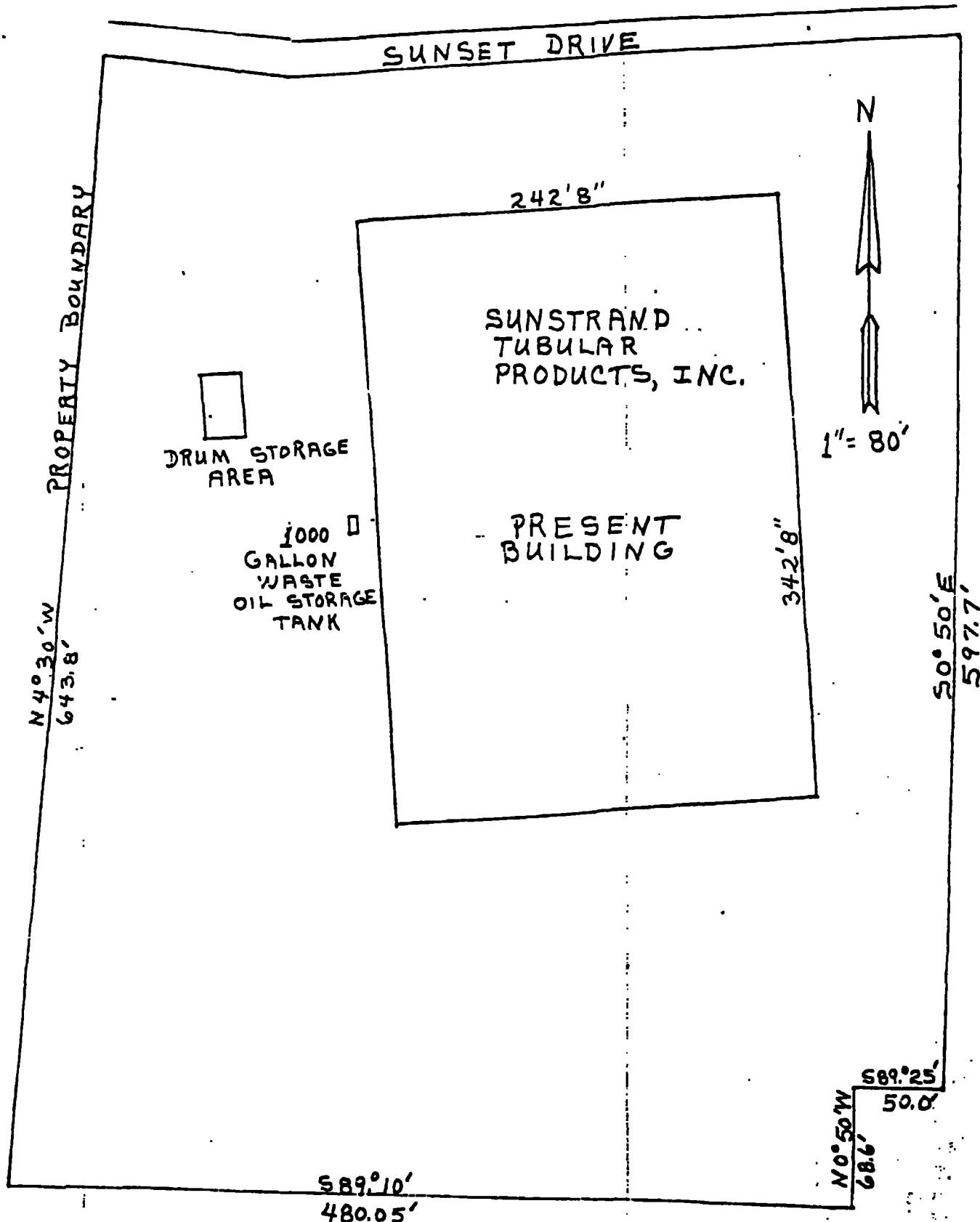
FOR OFFICIAL USE ONLY

W	DUP	2	DUP
1	2	3	4
15	14	13	12

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD- WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEA- SURE (enter code)	D. PROCESSES							
				1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (If a code is not entered in D(1))			
25	26	27	28	29	30	31	32	33	34	35	36
1	F 0 0 1	9200	P	S02							
2	F 0 0 6	1350	P	S01							
3	F 0 0 7	600	P	T01							
4	F 0 0 9	1090	P	T01							
5	F 0 1 7	3000	P	S01							
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

## V. FACILITY DRAWING (see page 4)



NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 26,  
TOWNSHIP 38 NORTH, RANGE 17 WEST, CAMDEN COUNTY, MISSOURI.

*TSO*

**Sundstrand Tubular Products, Inc.**

Subsidiary of Sundstrand Corporation



SUNSET DRIVE • P. O. BOX 636 • CAMDENTON, MISSOURI 65020 • TELEPHONE 314-346-5693

November 16, 1983

**RECEIVED**

J. Doyle  
Missouri Department of Natural Resources  
P.O. Box 1368  
Jefferson City, Missouri 65102

NOV 18 1983

WASTE  
MANAGEMENT PROGRAM

Dear Mr. Doyle:

Enclosed is a response to the Federal EPA to a technical review of our Hazardous Waste part A application. This was a very informative review for us and we have updated and resubmitted our application.

Let me know if I can be of further assistance.

Sincerely yours,

*Donavon Mans*

Donavon Mans  
Plant Engineer

Enclosure

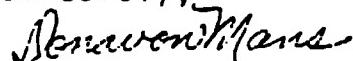
DM/1w

5)

- a) Our waste oil is a mixture of waste lubricating oils, hydraulic Oils, and some oil recovered from still bottoms. Our industry is now recovering from a three year recession and production rates have more than doubled. The part (A) application reflects this increase in waste oils generated.
- b) The code F007 was in error and should have read F006 on the annual report. The revised annual report is labeled Exhibit III.
- 6) The revised part (A) permit application has been revised to show the 1,000 gallon tank utilized for F001 waste oil, and the outside drum storage area.

I hope I have adequately addressed all concerns. If you need any additional information contact me at any time.

Sincerely,

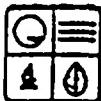


Donavon Mans  
Plant Engineer

cc: J. Doyle  
L. Keenan  
B. King  
T. Misak  
L. Larson

DM/lw

Form H.W.G.-1A HAZARDOUS WASTE REGISTRATION  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
P.O. Box 1368, Jefferson City, Missouri 65102



MISSOURI  
GENERATOR I.D. NO.  
(Fill in 5-digit no. if one has  
been assigned.)

01417

Part II - HAZARDOUS WASTE INFORMATION

A form shall be completed for each type of hazardous waste generated and shall be filed with the Department of Natural Resources.

(Instructions: Print in Black Ink or Typewrite)

Section A - General Facility Information

1. Name Sundstrand Tubular Products, Inc.

2. Street P. O. Box 636 (Sunset Dr.)

City Camdenton State Missouri Zip Code 65020

3. Sequential Waste Number 2 Total Wastes Registered 3

Section B - Hazard Classification

DNR Hazard Class: (as defined in 10 CSR 25-4.010)

1.  Toxic, I.D. Number \_\_\_\_\_ S.  Listed Waste, I.O. Number \_\_\_\_\_  
2.  Reactive, D003  
3.  Ignitable, D001  
4.  Corrosive, D002
- (Identification numbers for the toxic and listed wastes are in Sections 10 CSR 25-4.010 (S) & (6).

Section C - Generation Rate

1.A  Continual Generation B.  Intermittent Generation C.  One-time-only generation.

2. Average Generation Rate/Month If A or B above: .5 drum

3. Units (Circle One): Tons Gals Pounds Cubic Yards Empty Containers 55 gal. drums  
175 lbs./drum (Give number & size above)

Section D

Description of Generation Process (Example: K052 Tank Bottoms (leaded) from the petroleum refining industry)

Solvent based paint wastes (dry overspray residue)

HWG-1A

Rev: 0-82

Section I

Sensitivity Data:

1. Stability	Unstable		Conditions to avoid
	Stable	X	

2. Incompatibility (materials to avoid) **strong oxidizing agents**

3. Hazardous Polymerization	May Occur		Conditions to avoid
	May Not Occur	X	

Section J

Spill or Leak Procedures: Wipe or sweep up immediately and contain saturated absorbents.

Steps to be taken in case material is released

Section K

Special Protection Information:

Sufficient ventilation to maintain below TLV.

1. Respiratory Protection (specify type)

2. Protective gloves

3. Eye Protection

4. Special Clothing (specify type)

5. Precautions to be taken in handling and storing

Keep in sealed containers, subject to spontaneous combustion.

6. Other Precautions

7. 24-hour emergency phone number

Section L

Containerization:

Specify appropriate DOT containers, labels and placards required for transportation.

**SUNDSTRAND TUBULAR PRODUCTS**

**GENERAL INFORMATION**

**Exhibit II**

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

7	3	5	8	5
(specify)				

Refrigeration & Heating Equipment

A. FIRST

B. SECOND

6	7
(specify)	

C. THIRD

6	7
(specify)	

D. FOURTH

VIII. OPERATOR INFORMATION:

A. NAME

SUNDSTRAND TUBULAR PRODUCTS, INC.

B. Is the name listed  
Item VIII-A also the  
owner?

YES  NC

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F - FEDERAL	M - PUBLIC (other than federal or state)
S - STATE	O - OTHER (specify)
P - PRIVATE	

P (specify)

D. PHONE (area code & no.)

6	A	3	1	4	3	4	6	5	6	9	3
(81) 346-5693											

E. STREET OR P.O. BOX

BOX 636

F. CITY OR TOWN

CAMDENTON

G. STATE

M O

H. ZIP CODE

65020

IX. INDIAN LAND

Is the facility located on Indian lands?

YES  NO

82

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
9	N																								

D. PSD (Air Emissions from Proposed Sources)

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
9	P																								

B. UIC (Underground Injection of Fluids)

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
9	U																								

E. OTHER (specify)

(specify)

C. RCRA (Hazardous Wastes)

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
9	R																								

E. OTHER (specify)

(specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Manufacture air conditioning components and condenser coils from aluminum and copper.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments, and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)

Lloyd Larson  
Vice President

B. SIGNATURE

C. DATE SIGNED

11-14-83

COMMENTS FOR OFFICIAL USE ONLY

S

C

11-14

Continued from the front.

### III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

### IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS.....	P	KILOGRAMS.....	K
TONS.....	T	METRIC TONS.....	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

#### D. PROCESSES

##### 1. PROCESS CODES:

For listed hazardous wastes: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

##### 2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

ITEM NO. L1Z	A. EPA HAZARD- OUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEA- SURE (enter code)	D. PROCESSES								
				1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D(1))				
X-1	K 0 5 4	900	P	T	0	3	D	8	0			
X-2	D 0 0 2	400	P	T	0	3	D	8	0			
X-3	D 0 0 1	100	P	T	0	3	D	8	0			
X-4	D 0 0 2											

*included with above*

continued from the front.

## V. DESCRIPTION OF HAZAR

## S WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. (enter from page 1)

M	C	D	O	6	2	4	3	9	3	5	1	T/R/C
1	1	1	1	1	1	1	1	1	1	1	1	1

## I. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

## VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

## VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)

LONGITUDE (degrees, minutes, & seconds)

3	8	0	0	3	4	5
00	00	00	00	00	00	00

9	2	4	5	2	6	0
00	00	00	00	00	00	00

## VIII. FACILITY OWNER

A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER

2. PHONE NO. (area code & no.)

E

55 1M - 3M 1M - 4L 4P

3. STREET OR P.O. BOX

4. CITY OR TOWN

5. ST.

6. ZIP CODE

F

G

## IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)

Lloyd Larson

Vice President

B. SIGNATURE

C. DATE SIGNED

11-14-83

## X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)

Thomas L. Misiak  
Plant Manager

B. SIGNATURE

C. DATE SIGNED

11-14-83

**SUNDSTRAND TUBULAR PRODUCTS**

**FACILITY ANNUAL HAZARDOUS WASTE REPORT**

**Exhibit III**

Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGENCY

Facility Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

VIII. FACILITY'S EPA I.D. NO.

TIA C

LF1M0062439351 1 2 13 14 15

Date received: \_\_\_\_\_

Received by: \_\_\_\_\_

IX. GENERATOR'S EPA I.D. NO.

G 6 28

X. GENERATOR NAME (enter name from whom all wastes  
and this page were received)

ON-SITE

XI. GENERATOR ADDRESS

XII. WASTE IDENTIFICATION

Sequence No.	A. Description of Waste	B. EPA Hazardous Waste No. (see instructions)	C. Handling Method	D. Amount of Waste	E. Unit of Measure
1	USED LUBRICATING OIL	100 16, 17	S, O, 2	1772.0	P
2	WASTEWATER TREATMENT SLUDGE FROM ELECTROPLATING	F, 00, 16	S, O, 1	2640	P
3	SOLVENT BASE PAINT WASTE	D, 0, 0, 1	S, O, 1	5163	P
4					
5					
6					
7					
8					
9					
10					
11					
12					

XIII. COMMENTS (enter information by section number—see instructions)

Revised 11-14-83, Section XII. Waste Identification.

DNR FORM H.W.G.-6  
GENERATOR FEE FORM

Section A - General Information

Name: Sundstrand Tubular Products, Inc.  
Missouri Generator I.D. # 0\_1\_4\_1\_7 EPA Generator I.D. # MOD062439351  
Location: Camdenton, Missouri  
Mailing Address: Box 636  
City: Camdenton State Missouri Zip 65020  
Total Number of Waste Streams: 3

Section B - Missouri Hazardous Waste Generated

Mo. Waste I.D. Number	EPA Waste I.D. # if Applicable	Estimated Annual Generation in KKG for 19
1. <u>0_0_1</u>	<u>F_0_0_1</u>	<u>13.2</u>
2. <u>0_0_2</u>	<u>D_0_0_1</u>	<u>.4773</u>
3. <u>0_0_3</u>	<u>F_0_0_6</u>	<u>1.200</u>
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

Use DNR Form H.W.G.-6A if more than 10 waste streams are generated.

Total quantity of waste to be generated/year in KKG 14.8773

Generator fee (KKG/year X \$1.00) \$ 14.88

(Note: Waste to be managed by certified resource recovery facility is exempt).

Section C - Certification Statement

This is to certify that the above information is correct to the best of my knowledge.

Donavon Mans  
Signature of Authorized Person

1-6-82

Date

Revised 11-14-83

DONAVON MANS  
Please print or type name

**APPENDIX B**

**1990 PART A APPLICATION**



**MODINE**

*for  
Mark  
Jane*

December 3, 1990

REGISTERED MAIL (P 085 493 236)  
RETURN RECEIPT REQUESTED

U. S. Environmental Protection Agency  
726 Minnesota Avenue  
Kansas City, KS 66101

Dear Sir or Madam:

Effective midnight October 17, 1990, Modine Heat Transfer, Inc. a wholly owned subsidiary of Modine Manufacturing Company, assumed ownership and operations of Sundstrand Tubular Products - Sunset Dr. P. O. Box 636, Camdenton, MO.

The facility currently holds a Part A application and interim status as a treatment, storage and disposal facility, EPA ID# MCD06249351. Enclosed is the Part A application for the change in ownership of this facility.

The previous owner, Sundstrand Tubular Products, has requested closure from the State of Missouri for the TSD at this site. Modine will complete the closure activities and operate the facility as a "generator only" facility.

If you have any questions or comments, please contact me at (414)636-1649 or at the letterhead address.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas S. Sanicola".

Thomas S. Sanicola

TSS/jr

cc: M. Chiado - Sundstrand  
G. A. Fahl - Modine Manufacturing Company  
Don Mans - Modine Heat Transfer  
C. Robinson - MI DNR - Div. of Nat. Resources

**RECEIVED**

DEC 11 1990

**USEPA, RCRA Branch**

**RECEIVED**

DEC 11 1990

**IRMS SECTION**

Modine Manufacturing Company  
1500 DeKoven Avenue  
Racine, Wisconsin 53403

Telephone 414-636-1200  
Telex 26-4447  
Fax 414-636-1424

EPA I.D. Number (enter from page 1)

Second I.D. Number (enter from page 1)

M O D 0 6 2 4 3 9 3 5 1

## XI. Nature of Business (provide a brief description)

The manufacture of air conditioning components and condenser coils from aluminum and copper.

## XII. Process - Codes and Design Capacities

- A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Twelve lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided in Item XIII.
- B. PROCESS DESIGN CAPACITY - For each code entered in column A, enter the capacity of the process.
1. AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process unit.
  2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.
- C. PROCESS TOTAL NUMBER OF UNITS - Enter the total number of units used with the corresponding process code.

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	UNIT OF MEASURE CODE
<b>DISPOSAL:</b>			
D79	INJECTION WELL	GALLONS; LITERS; GALLONS PER DAY; OR LITERS PER DAY	G
D80	LANDFILL	ACRE-FEET OR HECTARE-METER	E
D81	LAND APPLICATION	ACRES OR HECTARES	U
D82	OCEAN DISPOSAL	GALLONS PER DAY OR LITERS PER DAY	L
D83	SURFACE IMPOUNDMENT	GALLONS OR LITERS	H
<b>STORAGE:</b>			
S01	CONTAINER (barrel, drum, etc.)	GALLONS OR LITERS	V
S02	TANK	GALLONS OR LITERS	D
S03	WASTE PILE	CUBIC YARDS OR CUBIC METERS	W
S04	SURFACE IMPOUNDMENT	GALLONS OR LITERS	N
<b>TREATMENT:</b>			
T01	TANK	GALLONS PER DAY OR LITERS PER DAY	S
T02	SURFACE IMPOUNDMENT	GALLONS PER DAY OR LITERS PER DAY	J
T03	INCINERATOR	SHORT TONS PER HOUR; METRIC TONS PER HOUR; GALLONS PER HOUR; LITERS PER HOUR; OR BTU'S PER HOUR	R
T04	OTHER TREATMENT <small>(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundment or incinerators. Describe the processes in the space provided in Item XII.)</small>	GALLONS PER DAY; LITERS PER DAY; POUNDS PER HOUR; SHORT TONS PER HOUR; KILOGRAMS PER HOUR; METRIC TONS PER DAY; METRIC TONS PER HOUR; OR SHORT TONS PER DAY	C B A Q F K



**APPENDIX C**  
**CLOSURE PLANS**

December 17, 1988

Mr. Dan Rose  
Department of Natural Resources  
Division of Environmental Quality  
P.O. Box 176  
Jefferson City, Missouri 65102

Subject: TSD Closure

Dear Mr. Rose:

This letter is to request your approval of the enclosed closure plan for the Sundstrand Tubular Products Storage Facility located at Sunset Drive in Camdenton, Missouri.

At this facility, we use part of the pretreatment room for storage of waste Trichloroethylene, paint waste and pretreatment waste.

After closure, we wish to continue in operation as a hazardous waste generator only, storing for less than ninety days.

If there are any questions, please contact me at (314) 346-5693.

Sincerely,

Donavon Mans  
Plant Engineer

/den

## CLOSURE PLAN

### 1. FACILITY CONDITIONS

#### a. General Information

- 1) Facility is a 47' X 75' Block building with chemical resistant concrete floor. The storage facility is contained in a separately diked part of the room, 47' X 41'.
- 2) F001 Trichloroethylene is stored in a 1000 gallon steel storage tank and 55 gallon drums. D001 paint waste is stored in 55 gallon drums. F006 pretreatment waste is stored in 55 gallon drums.

#### b. The maximum inventory of wastes in storage and in treatment at any time during the life of this facility is as follows:

- 1) F001 - The spent trichloroethylene used in degreasing and sludges from the recovery of trichloroethylene in degreasing operations. 61,360 lbs.
- 2) F006 - Wastewater treatment sludges from electroplating operations. 58,388 lbs.
- 3) D001 - Waste from Industrial Painting. 5,250 lbs.

#### c. Closure Schedule

Sundstrand Tubular Products normally operates on a 5 day 3 shift basis. To minimize plant downtime, we propose to complete closure during our Scheduled Vacation shutdown which is from August 7, 1989 through August 18, 1989. Completing closure during this time eliminates plant downtime and allows an orderly transition from T.S.D. Status to 90 day storage Generator Status.

#### d. Extension of Interim Status

Incorporation of the above schedule requires the extension of Part A Status until August 18, 1989 without submission of Part B requirements. Acceptance of this plan by the State of Missouri must include this extension.

### 2. FACILITY DECONTAMINATION

Steps required to decontaminate facility equipment during closure are as follows:

- a. The trichloroethylene waste storage tank is to be thoroughly cleaned of all oils, trichloroethylene, sludges, etc. No odor or residue is to be left in the equipment. All trichloroethylene waste and hazardous residue from decontamination procedure is to be disposed of by shipping to Safety Kleen for proper treatment and disposal. The storage tank will be inspected and certified safe for continued use after closure.
- b. All wastewater pretreatment waste is to be removed from the dryer and put into drums. The drums are to be shipped to

Chemical Waste Management in Fort Wayne, Indiana to be landfilled.

- c. All solid paint waste will be shipped to the S.C.A. Facility in Chicago to be incinerated and the liquid waste will be shipped to Safety Kleen in Clarksville, Mo. to be incinerated in the Fuels Blending Program.
- d. The floor will be decontaminated and inspected for cracks. Decontamination will include washing, steam cleaning and collecting residue with a wet vacuum. The amount of residue is not expected to exceed (2) 55 gallon drums. This waste will be properly labeled and shipped to Safety Kleen for treatment and disposal.

The environmental coordinator will monitor all closure activities to ensure conformance with our plan.

Unless Missouri has a Closure Certification Statement form of its own we propose to use the attached form which is the same as the one used by the Illinois Environmental Protection Agency.

SUNDSTRAND TUBULAR PRODUCTS

ESTIMATED COST OF

CLOSURE

<u>DESCRIPTION</u>	<u>LABOR</u>	<u>MATERIAL</u>
Salvage 1000 gallons waste oil		\$ 550.00
Clean 1000 gallon waste oil tank (16 hours)	\$ 240.00	
Clean Facility (32 hours)	480.00	
Dispose of 40 drums hazardous waste (16 hours)	240.00	5,200.00
Dispose of 2 drums clean-up waste (2 hours)	30.00	210.00
Engineering Fee		400.00
TOTAL:	\$ 990.00	\$6,060.00
TOTAL LABOR AND MATERIAL		\$7,450.00

ATTACHMENT

This statement is to be completed by both the responsible officer and by the registered professional engineer upon completion of closure. At least one copy of the certification must contain the original signatures.

CLOSURE CERTIFICATION STATEMENT

The hazardous waste management units at the facility described in this document have been closed in accordance with the specifications in the approved closure plan. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

USEPA ID Number

Facility Name

Signature of Owner/Operator

Name and Title

Signature of Registered P.E.

Name of Registered P.E. and  
Registration Number

Date

7-16-88

Sundstrand Tubular Products Inc.,  
Box 636  
Camdenton, Mo. 65020

September 4, 1990

Ms. Jan Skouby  
Department of Natural Resources  
P.O. Box 176  
Jefferson City, Missouri 65102

Dear Jan:

Attached is a copy of our request for closure plan approval dated November 7, 1988. The basic plan has not changed, but I have revised the plan to update our current situation. Financial assurances have been increased to \$15,000 since the plan was originally submitted.

Per our telephone conversation, and notes from my file on closure we will be required to do the following:

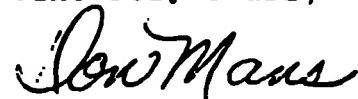
1. Submit a new letter of intent to close which is being done with this letter.

2. The state of Missouri will publish our intent to close the storage facility, which allows a 30 day period for public comments or requests for public hearings.

3. Sundstrand will retain the services of a registered Engineer to certify that the facility is clean and properly closed according to EPA regulations CFR 265.

3. 60 days after closure and receipt of the closure certification, the State of Missouri will issue a release from the requirement for financial assurances.

Sincerely Yours,



Don Mans  
Plant Engineer

## CLOSURE PLAN

### STORAGE FACILITY CONDITIONS

#### General Information

- 1) The storage facility is a 47' X 75' Block building with a 1/4" thick impervious chemical resistant coating over a seamless concrete floor. The storage facility is contained in a separately diked part of the room, 47' X 41'.
- 2) F001 Trichloroethylene was stored in a 1000 gallon steel storage tank and 55 gallon drums. ~~The use of trichloroethylene was discontinued in December 1989.~~ All waste was shipped out of the facility in January 1990. 1,1,1-trichloroethane is now being used and the F001 waste is stored in 55 gallon drums. D001 paint waste is stored in 55 gallon drums. F006 pretreatment waste is stored in 55 gallon drums.
- 3) The maximum inventory of wastes in storage and in treatment at any time during the life of this facility is as follows:

F001 - The spent trichloroethylene used in degreasing and sludges from the recovery of trichloroethylene in degreasing operations. 61,360 lbs.

F006 - Wastewater treatment sludges from electroplating operations. 58,388 lbs.

D001 - Waste from Industrial Painting. 5,250 lbs.

#### Closure Schedule

Sundstrand Tubular Products plans to complete all closure activities between September 24, 1990 and October 12, 1990. Completing closure during this time will allow an orderly transition from T.S.D. Status to 90 day storage Generator Status.

### FACILITY DECONTAMINATION

Steps required to decontaminate facility equipment during closure are as follows:

The trichloroethylene waste storage tank is to be thoroughly cleaned of all oils, trichloroethylene, sludges, etc. No odor or residue is to be left in the equipment. All trichloroethylene waste and hazardous residue from decontamination procedure is to be disposed of by shipping to Safety-Kleen for proper treatment and disposal. The storage tank will be inspected and certified safe for continued use after closure.

All wastewater pretreatment waste is to be removed from the dryer and put into drums. The drums are to be shipped to

Chemical Waste Management in Fort Wayne, Indiana to be landfilled.

All liquid paint waste will be shipped to Safety Kleen in Clarksville, Mo. to be incinerated in the Fuels Blending Program.

The floor will be decontaminated and inspected for cracks. Decontamination will include washing, steam cleaning and collecting residue with a wet vacuum. The amount of residue is not expected to exceed (2) 55 gallon drums. This waste will be properly labeled and shipped to Safety Kleen for treatment and disposal.

The environmental coordinator will monitor all closure activities to ensure conformance with our plan.

Unless Missouri has a Closure Certification Statement form of its own we propose to use the attached form which is the same as the one used by the Illinois Environmental Protection Agency.

## SUNDSTRAND TUBULAR PRODUCTS

## ESTIMATED COST OF CLOSURE

DESCRIPTION	LABOR	MATERIAL
Salvage 1000 gallons waste oil		\$ 550
Clean 1000 gallon waste oil tank (16 hours)	\$ 240	
Clean Facility (32 hours)	\$ 480	
Dispose of 40 drums hazardous waste (16 hours)	\$ 240	\$ 5,200
Dispose of 2 drums clean-up waste (2 hours)	\$ 30	\$ 240
Engineering Fee		\$ 400
TOTAL:	\$ 990.00	\$6,060.00
TOTAL LABOR AND MATERIAL		\$7,450.00

**Environmental  
Projects**

4470 N. Highway 763 Columbia, Missouri 65202 (314) 875-0049 FAX (314) 875-0079

September 26, 1990

Mr. Don Mans  
Sundstrand Tubular Products  
P.O. Box 636  
Camdenton, MO 65020

Re: Closure of Storage Facility

Dear Mr. Mans:

Below please find our proposal to provide the required engineering and analytical services necessary to certify the proper closure of your storage facility.

Registered Professional Engineer: 4 hrs @ \$60\hr  
Above estimate includes travel time

Total Metals Analysis for 8 RCRA Metals: \$127.50/sample

Total Cyanides: \$25.00/sample

1,1,1-trichloroethane and trichloroethylene  
both analyses performed on sample: \$50.00/sample

At this point I am not certain the exact number of samples which will be required for each of the above parameters. At this time I would estimate 1 or 2 samples for total metals and possibly 3 or 4 wipe samples for cyanides and organics. Any additional administrative responsibilities we would be handling would be billed at our normal rates which are stated above for a P.E., our clerical staff is billed at \$30/hour.

Should you have any questions or comments on the above, please feel free to contact me at your convenience.

Sincerely,

  
Kirby Kassen, P.E.  
Project Manager

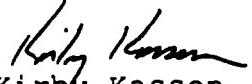
page 2  
Mr. Don Mans

and so no polished water was necessary.

The visual inspection indicated that the storage area was clean in that no visible contamination of any type was apparent. I believe the results of the samples analyzed as noted above (especially the Rinsate) do as well indicate no apparent residual contamination at levels which should pose a threat to human health or the environment.

Should you have any questions on any of the above, please feel free to contact me at your convenience.

Sincerely,

  
Kirby Kassen, P.E.  
Project Manager

**EPM Enterprises, Inc.**  
**DBA Environmental**  
**Projects**

4470 N. Highway 763 Columbia, Missouri 65202 (314) 875-0049

**REPORT OF ANALYSIS**

TO: Environmental Projects  
4470 North Hwy. 763  
Columbia, MO 65202  
Attn: Kirby Kassen  
Reference: Sunstrand Tubular

Date Received: 10-18-90  
Date Reported: 10-30-90  
Report #1237  
P.O. # none

<u>EPL I.D./Sample I.D.</u>	<u>Parameter</u>	<u>Results/Units</u>	<u>Method</u>
1208/Rinseate Sample	Arsenic, Total	3.2 ug/L	SM 303E
	Barium, Total	1.66 mg/L	EPA 208.1
	Cadmium, Total	1.02 mg/L	EPA 213.1
	Chromium, Total	1.25 mg/L	EPA 218.1
	Lead, Total	0.70 mg/L	EPA 239.1
	Mercury, Total	8.5 ug/L	EPA 245.1
	Selenium, Total	< 0.20 ug/L	SM 303E
	Silver, Total	< 0.01 mg/L	EPA 272.1
	1,1,1-Trichloroethane	12.0 ug/L	EPA 601
	Trichloroethylene	< 10.0 ug/L	EPA 601
1209/Wipe #1	1,1,1-Trichloroethane	< 0.03 ug/g	EPA 601
	Trichloroethylene	< 0.01 ug/g	EPA 601
1210/Wipe #2	1,1,1-Trichloroethane	< 0.03 ug/g	EPA 601
	Trichloroethylene	< 0.01 ug/g	EPA 601

October 30, 1990



Gene Banks  
Laboratory Director

**EPM Enterprises, Inc.  
DBA Environmental  
Projects**

4470 N. Highway 763 Columbia, Missouri 65202 (314) 875-0049

**STATEMENT**

DATE: October 30, 1990

TO: Sundstrand Tubular Products Inc. Report# 1237  
P.O. Box 636, Sunset Drive P.O.# 16955  
Camdenton, Missouri 65020

*72834* *10/30/90* *900465*  
*10/7*

<u>DESCRIPTION</u>	<u>AMOUNT</u>
1,1,1-Trichloroethane and Trichloroethylene 3 @ \$50	\$ 150.00
Total Metals Analysis for 8 RCRA Metals 1 @ \$127.50	\$ 127.50
	Sub-Total
	\$ 277.50
Inspect Storage Facility Professional Engineer, 4 hrs @ \$60.00	\$ 240.00
Generate Report .5 hrs @ \$60.00	\$ 30.00
	Sub-Total
	\$ 270.00
	<b>TOTAL</b>
	<b>\$ 547.50</b>

ORDERED BY: Mr. Don Mans

## PURCHASE ORDER

PURCHASE  
ORDER NO. 16955

## Sundstrand Tubular Products, Inc.

Unit of Sundstrand Corporation



BOX 636 • SUNSET DRIVE • CAMDENTON, MISSOURI 65020 • PHONE (314) 346-5693

OCTOBER 11, 1990

1      1

PAGE \_\_\_\_ OF \_\_\_\_ PAGES

THE ABOVE NUMBER MUST APPEAR ON EACH  
PACKAGE INVOICE AND BILL OF LADING.  
WALB 10/14/90USE SEPARATE INVOICE  
FOR EACH PURCHASE ORDER  
SINGLE COPY INVOICES ONLYMISSOURI RESALE CERTIFICATE OF  
REGISTRATION NO. 10109242( ) TAXABLE ITEMS \_\_\_\_\_  
( ) NONTAXABLE ITEMS \_\_\_\_\_DATE:  
PLEASE ENTER THE FOLLOWING ORDER SUBJECT TO THE CONDITIONS APPEARING ON THE REVERSE SIDE

ENVIRONMENTAL PROJECTS

SELLER  
• 4470 N. HWY. 762  
COLUMBIA, MO 65202  
• ATTN: KIRBY SASSER  
375-3049

910280

ALL CORRESPONDENCE AND CONTACTS PERTAINING TO THIS ORDER SHOULD BE DIRECTED TO \_\_\_\_\_

MATERIAL SHIP DATE	F.O.B.	INVOICE PAYMENT TERMS <b>NET 45</b>		BUYER <b>HALTERMAN/CARSAHAN</b>		
SHIP VIA		FRT. CHGS.	<input type="checkbox"/> PPD & ADD	<input type="checkbox"/> PPD & ALD.		
		<input type="checkbox"/> OTHER	<input type="checkbox"/> COLLECT			
DELIVER TO DEPT. <b>J. JANS</b>	DEPT. CHARGED <b>053</b>	ACCT. NO. <b>34902</b>	REQUESTOR	USED ON		
ITEM NO.	QUANTITY	U/M	PART NO.; CODE NO.; DESCRIPTION	UNIT PRICE	PER	TOTAL AMOUNT
1.	1	LOT	<b>4</b> 90-C063 PROVIDE ENGINEERING AND ANALYTICAL SERVICES NECESSARY TO CERTIFY THE PROPER CLOSURE OF OUR HAZARDOUS WASTE STORAGE FACILITY.  SCOPE OF WORK AND RATES ARE DESCRIBED IN THE SUNDSTRAND CLOSURE PLAN AND THE ENVIRONMENTAL PROJECTS LETTER DATED 9-26-1990.  PRIOR SUNDSTRAND APPROVAL IS REQUIRED FOR ANY EXPENDITURES EXCEEDING \$600.00.			

THIS CONFIRMS ..... TELEPHONE ORDER TO YOUR .....  
(DATE) (NAME)

P.O. AND CODE NOS. MUST BE MARKED ON EACH CONTAINER

Sundstrand Tubular Products, Inc.

Unit of Sundstrand Corporation  
CAMDENTON, MISSOURI 65020

BY \_\_\_\_\_ BUY \_\_\_\_\_

# General Testing Laboratories, Inc.

1517 Walnut • Kansas City, MO 64108

Phone: 816-471-1205

No. 060346

SHOW ABOVE NUMBER C  
REMITTANCE

PLEASE REMIT FROM THIS INVOICE  
STATEMENT RENDERED ONLY ON REQUEST

TERMS: NET 30 DAYS FROM INVOICE DATE  
2% / MO. CHARGE AFTER 30 DAYS

FEDERAL ID. NO. 44-0657948

SUNSTRAND TUBULAR PRODUCTS INC  
PO BOX 636  
CAMDENON MO 65020  
ATTN: DON MANS

INVOICE DATE	10-31-90	PROJECT NAME	16769	053-0534902	Closed waste facility	of storage	SUN20
P.O. NUMBER		WORK ORDERED BY	34				
		GTL PROJECT NO.		GTL QUOTE NO.	GTL CUSTOMER NO.		
REPORT DATE	REPORT NUMBER	DESCRIPTION		REF. NO.	UNIT PRICE	QTY.	PRICE
9/25	26146	Pretreatment waste F006 GTL received 9/10 TCLP-Metals Cyanide		229	25	2	\$ 310.00 50.00 <u>34902</u> 360.00
25	26207	New & reclaimed oil (2) GTL received 9/10 4 metals w/digestion T. Sus. Solids T. Acid Number		201/07 225 225	60 12 30	2 2 2	120.00 24.00 60.00 <u>204.00</u>
					INVOICE TOTAL		\$ 564.00

D. Mans  
11-27-90



# General Testing Laboratories, Inc.

Engineering — Chemical Consultants

1517 WALNUT STREET / KANSAS CITY, MISSOURI 64108 / 816-471-1205



SUNSTRAN TUBULAR PRODUCTS INC  
ATTN DON MANS  
PO BOX 636  
CAMDENON MISSOURI 65020

REPORT NO. 26146

SEPTEMBER 25, 1990

F006 Pretreatment Waste Sample, GTL 9/10/90

TCLP: FEDERAL REGISTER/VOL. 55, NO: 61/THURSDAY, MARCH 29,  
1990, PAGE 11864.

Antimony.....	0.007 mg/liter
Arsenic.....	<0.005 mg/liter
Barium.....	0.14 mg/liter
Cadmium.....	0.12 mg/liter
Chromium.....	2.4 mg/liter
Copper.....	430 mg/liter
Lead.....	0.16 mg/liter
Mercury.....	<0.0002 mg/liter
Nickel.....	1.4 mg/liter
Selenium.....	<0.005 mg/liter
Silver.....	0.03 mg/liter
Thallium.....	<0.005 mg/liter
Zinc.....	35 mg/liter

#### ADDITIONAL ANALYSIS:

Total Cyanide.... 50 ppm  
Amenable Cyanide.. 23 ppm

METHOD OF ANALYSIS: SW846-9010

GENERAL TESTING LABORATORIES, INC.

(1) llk

By Paul Myer

## PURCHASE ORDER

PURCHASE  
ORDER NO.

16769

## Sundstrand Tubular Products, Inc.

Unit of Sundstrand Corporation



THE ABOVE NUMBER MUST APPEAR ON EACH PACKAGE, INVOICE AND B/L. PACKING LIST MUST ACCOMPANY EACH SHIPMENT.  
MAIL B/L DAY OF SHIPMENT

P. O. BOX 636 • SUNSET DRIVE • CAMDENTON, MISSOURI 65020 • PHONE (314) 346-5693

DATE: SEPTEMBER 10, 1990 PAGE 1 OF 1 PAGES

PLEASE ENTER THE FOLLOWING ORDER SUBJECT TO THE CONDITIONS APPEARING ON THE REVERSE SIDE

S E L L E R  
 • GENERAL TESTING LABS  
 • 1517 WALNUT ST.  
 • KANSAS CITY, MO 64108

USE SEPARATE INVOICE  
 FOR EACH PURCHASE ORDER  
 SINGLE COPY INVOICES ONLY

MISSOURI RESALE CERTIFICATE OF  
 REGISTRATION NO. 10109242

( ) TAXABLE ITEMS \_\_\_\_\_  
 ( ) NONTAXABLE ITEMS \_\_\_\_\_

ALL CORRESPONDENCE AND CONTACTS PERTAINING TO THIS ORDER SHOULD BE DIRECTED TO \_\_\_\_\_

MATERIAL SHIP DATE	F.O.B.	INVOICE PAYMENT TERMS	BUYER
ASAP	SOURCE	NET 45	HALTEMAN/CARNAHAN

SHIP VIA  
**BEST**

DELIVER TO DEPT.  
**D. MASS**

DEPT. CHARGED

ACCT. NO.

REQUESTOR

USED ON

FRT. CHGS:  PPD & ADD  PPD & ALD.  COLLECT  
 OTHER

ITEM NO.	QUANTITY	U/M	PART NO.: CODE NO.: DESCRIPTION	UNIT PRICE	PER	TOTAL AMOUNT
1.	1	EA	98-0293 CONDUCT TCLP TEST FOR 1 SAMPLE OF F306 PRETREATMENT WATERS. TEST FOR THE FOLLOWING METALS: ANTIMONY, ARSENIC, BARIUM, CADMIUM, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, SELENIUM, SILVER, THALIUM, AND ZINC.	\$225.00	EA	\$225.00
2.	1	EA	CONDUCT TOTAL CYANIDE AND AMENABLE CYANIDE ON SAME SAMPLE USING SW846 METHOD NO. 9010 WITH .5 TO 10 GRAM SAMPLE DISTILLED FOR 1 HOUR TO 1 HR 15 MINUTES.  TYPE DATE SAMPLED, DRUM NUMBERS OF COMPOSITE AND STATISTICS OF CYANIDE TEST ON THE REPORT. (METHOD, AMOUNT, AND DISTILLATION TIME.)	50.00	EA	50.00
3.	2	EA	90-0462 SAMPLE OF NEW AND RECLAMED OIL PROVIDED. ESTABLISH COMPARISON OF TWO MATERIALS TO DETERMINE SOLIDS, ALKALINITY, AND METALICS.	102.00	EA	204.00

9-07-90

THIS CONFIRMS ..... TELEPHONE ORDER TO YOUR .....  
 (DATE) (NAME)

P.O. AND CODE NOS. MUST BE MARKED ON EACH CONTAINER

Sundstrand Tubular Products, Inc.

Unit of Sundstrand Corporation  
 CAMDENTON, MISSOURI 65020

BY *[Signature]*

BUYER

## STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 1027A

SPRINGFIELD ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 628/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS, INFECTIOUS,  
AND SPECIAL WASTE.

PLEASE TYPE

Form designed for use on 12-column typewriter

EPA Form 8700-22 (Rev. 9-86)

Form Approved OMB No 2050-0039. Expires 9-30-91

**UNIFORM HAZARDOUS  
WASTE MANIFEST**

3. Generator's Name and Mailing Address

SUNDSTRAND TUBULAR PRODUCTS  
P. O. BOX 636  
CAMDENTON, MO 65020

4. Generator's Phone 314 346-5696

5. Transporter 1 Company Name

SCHNEIDER TANK LINES

6. US EPA ID Number

V1D920004742

7. Transporter 2 Company Name

8. US EPA ID Number

10. US EPA ID Number

SAFETY KLEEN ENVIRO SYSTEMS

633 EAST 138th STREET

DOLTON, IL 60419

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. RQ WASTE 1,1,1 TRICHLOROETHANE ORM A UN2831

(oil, 1,1,1-Trichloroethane, Still Bottoms)

b. RQ FLAMMABLE LIQUID NOS

(contains Xylene NA 1307)

c.

d.

OF SOLID AND HAZARDOUS WASTE MANAGEMENT  
Box 7035  
Indianapolis, IN 46207-7035

PLEASE PRINT OR TYPE

(Form designed for use on nine (12-pitch) typewriter.)

Form Approved: OMB No. 2125-0701

UNIFORM HAZARDOUS  
WASTE MANIFEST

3. Generator's Name and Mailing Address <b>SUNSTRAND TUBULAR PRODUCTS P.O. BOX 636, SUNSET DRIVE CAMDEN, MO 65020</b>	1. Generator's US EPA ID No. <b>M-O-D-O-6-2-4-3-9-3-5-1</b>	Manifest Document No. <b>0-0-1-5-4</b>	2. Page 1 of 1 A. State Manifest Doc. <b>INA D30</b>
4. Generator's Phone ( 314 ) 346-5696	B. State Generator ID <b>01011775</b>		
5. Transporter 1 Company Name <b>SCHNEIDER TANK LINES</b>	6. Use EPA ID Number <b>W.I.D.9.8.0.9.0.4.7.4.2</b>	C. State Transporter ID <b>01000000000000000000000000000000</b>	
7. Transporter 2 Company Name	B. Use EPA ID Number	D. Transporter Phone	
9. Designated Facility Name and Site Address <b>CHEMICAL WASTE MANAGEMENT 4306 ADAMS CENTER ROAD FORT WAYNE, IN 46806</b>	10. Use EPA ID Number <b>I.N.D.O.7.8.9.1.1.1.4.6</b>	E. State Transporter <b>INFIN02</b>	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers	13. Total Quantity
a. <b>RQ HAZARDOUS WASTE SOLID NOS, ORM-E NA9189 (F004)</b>	0. 1. 8	D. M	<b>407.527.091</b>
b.			
c.			
d.			

14. Additional Descriptions for Materials Listed Above

**PRETREATMENT WASTE-SOLID(S) FROM METAL FINISHING  
PROFILE # F30424 ACL WORK ORDER # 12942**

15. Special Handling Instructions and Additional Information

DRUM #'s 858, 860, 863, 864, 866, 867, 870, 872, 874, 876, 878, 880, 881,  
895, 897 & 899

*On Donavan Mans*

*Wet Spec*

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above; proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to be determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

**DONAVON MANS**

Signature

*Donavan Mans*

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

*Konald C. Andrew*

Signature

*Konald C. Andrew*

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted item 19.

Printed/Typed Name

*Mindy Hasley*

Signature

*Mindy Hasley*

Certificate of Reassurance

Safety-Kleen Envirosystems certifies that on this date 10/18/90  
the material supplied by MODINE  
entered the treatment process.

The method of treatment has been deemed suitable for your spent materials and fully  
complies with all applicable regulatory and permit requirements:

Manifest Number IL3023748  
Manifest Date 10/18/90

  
Gornelle O. Breitzke  
Authorized Signature

# **Appendix A**

## **Historical Diagrams**

### **of the**

## **Hazardous Waste Management Units**

## V. FACILITY DRAWING (see page 4)

1980

SUNSET DRIVE

PROPERTY BOUNDARY  
 N 4° 30' W  
 643.8'

SUNSTRAND  
 TUBULAR  
 PRODUCTS, INC.

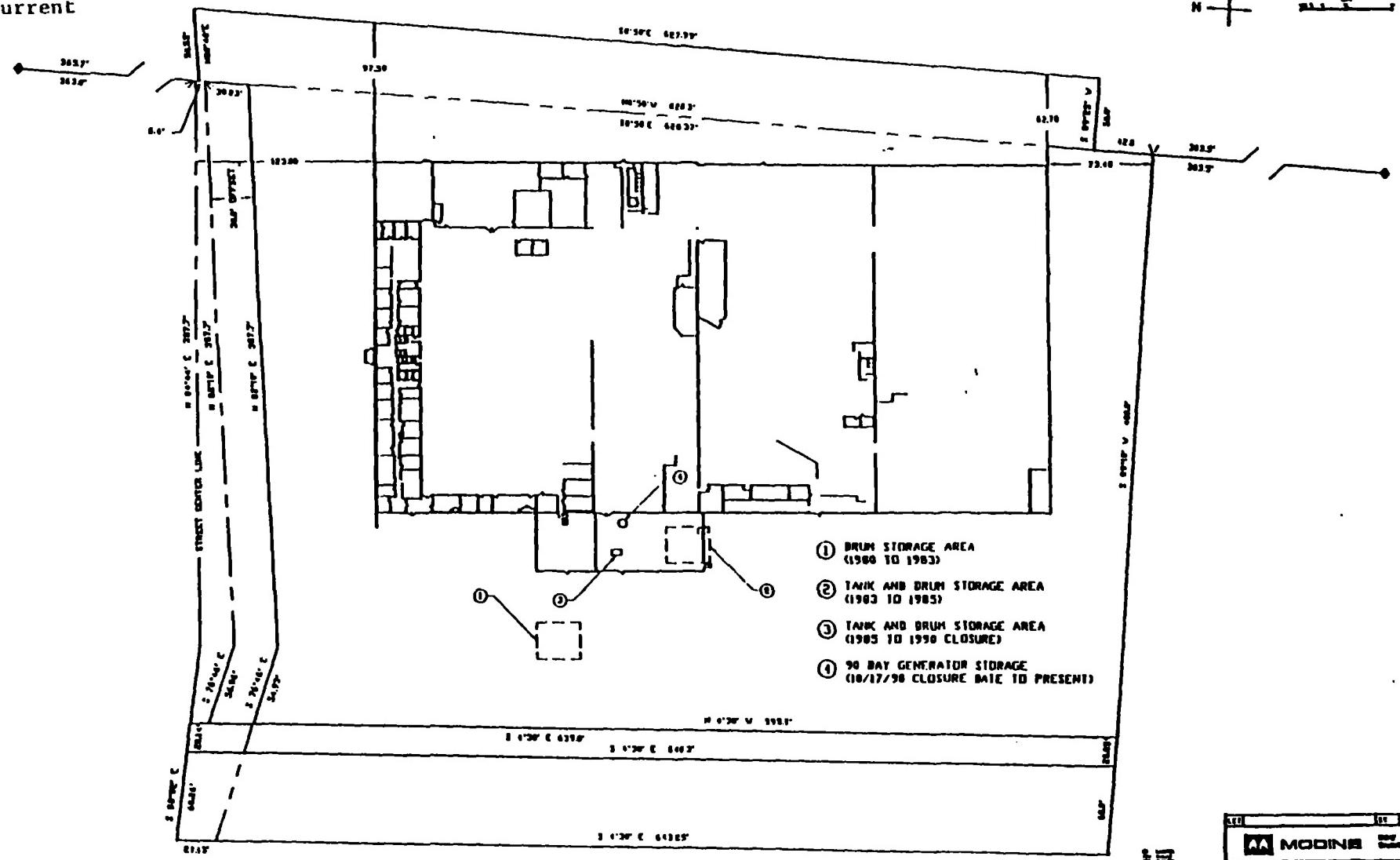
PRESENT  
 BUILDING

N  
 1" = 80'  
 342' 8"  
 597.7'  
 S 50° E  
 589.25'  
 50.0'  
 N 50° W  
 68.6'

589.10'  
 480.05'

NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 26,  
 TOWNSHIP 38 NORTH, RANGE 17 WEST, CAMDEN COUNTY, MISSOURI.

## Current



Closure Plan for  
Modine Heat Transfer, Inc.  
Camdenton, MO  
February 14, 1992

General Information

The current storage facility is contained in a 47'x 75' block building with a 1/4" thick impervious chemical resistant coating over a seamless concrete floor. The storage area is located in a separately diked part of the building that measures 47'x 41'. Previous storage areas include a drum storage area that was located northwest of the current storage area and a 1000 gallon storage tank that is located in the current storage area. See the attached diagram for the locations of the current and past storage areas.

F001 trichloroethylene waste was stored in the 1000 gallon steel storage tank and in 55 gallon drums. The use of trichloroethylene was discontinued in December, 1989. All trichloroethylene wastes were shipped from the facility and disposed of properly in January, 1990. F001 wastes (1,1,1 Trichloroethane wastes) are currently being stored in 55 gallon drums and in a storage tank not connected with the TSDF tank storage unit. D001 wastes (paint wastes) and F006 wastes (wastewater treatment sludges) are also stored in 55 gallon drums.

The maximum inventory of wastes in storage and treatment at any one time during the life of the facility was as follows:

F001 wastes - 61,360 lbs.  
F006 wastes - 58,388 lbs.  
D001 wastes - 5,250 lbs.

Closure Schedule

Modine Heat Transfer, Inc. intends to complete closure of the TSDF facility by December, 1992. All wastes were removed from the storage areas during the period between September 24, 1990 and October 12, 1990.

All interim storage units that are on-site are to be closed. The facility, at this time, is considered a generator only and will continue to ship off generated wastes in compliance with generator status regulations (90 day rule).

### Facility Decontamination

Decontamination of the storage areas will be accomplished in the following manner:

The storage tank on-site will be cleaned of oils, waste materials, sludges, etc. The tank then will be steam cleaned and closed from further waste storage use. The storage tank will be inspected after cleaning for closure purposes.

All concrete areas will be cleaned of oils, waste materials, sludges, etc. also. The concrete surface then will be washed, steam cleaned and the residue collected. The surface will also be inspected for cracks and/or deterioration of the surface coating and underlying substrate.

The outside (exposed) unit will be cleaned of all drums and other waste materials. If soils are contaminated, the contaminated material will be removed from the unit, stored in 55 gallon drums and disposed of properly.

### Waste Disposal

All wastes that are generated from the closure activities will be managed in accordance with all applicable local, state and Federal rules and regulations. This will include manifesting, transportation and disposal of the wastes. All wastes will be disposed of in approved, permitted Treatment, Storage and Disposal Facilities such as Chemical Waste Management in Fort Wayne, IN and Safety Kleen in Clarksville, MO.

### Other Related Activities

No other related activities, such as groundwater monitoring, leachate collection, etc., are planned or deemed necessary for the closure of the on-site interim storage units.

Personal safety procedures will be followed and any personal protective equipment will be provided, if necessary, for the cleanup and decontamination in accordance with all applicable Occupational Safety and Health Act (OSHA) regulations.

## **Appendix B**

**Table 2 Analysis  
Results for the  
Hazardous Waste Management Units**

**Table 2**  
**Summary of Soil Laboratory Analyses**  
**Modine Heat Transfer, Inc.**  
**Camdenton, Missouri**  
**Law Environmental Project Number 53-1543**

Sample I.D. Sample Depth (Feet) Collection Date	EPA Method	Units	B-1 2.0-4.0 10/08/91	B-2 2.0-4.3 10/08/91	B-3 2.0-4.0 10/08/91	B-4 4.0-8.0 10/08/91
Chloromethane	8010	ug/kg	ND	ND	ND	ND
Vinyl Chloride	8010	ug/kg	ND	ND	ND	78
Chloroethene	8010	ug/kg	ND	ND	ND	ND
Trichlorofluoromethane	8010	ug/kg	ND	ND	ND	ND
1,1-Dichloroethene	8010	ug/kg	ND	ND	ND	ND
Methylene Chloride	8010	ug/kg	"8.4	4.8	ND	ND
trans-1,2-Dichloroethene	8010	ug/kg	ND	ND	ND	12
1,1-Dichloroethane	8010	ug/kg	0.2	ND	ND	ND
Chloroform	8010	ug/kg	ND	ND	ND	ND
1,1,1-Trichloroethane	8010	ug/kg	160	1.2	5.9	ND
Carbon Tetrachloride	8010	ug/kg	ND	ND	ND	ND
1,2-Dichloroethene	8010	ug/kg	ND	ND	ND	ND
Trichloroethylene**	8010	ug/kg	61	ND	ND	ND
1,2-Dichloropropane	8010	ug/kg	ND	ND	ND	ND
Bromodichloromethane	8010	ug/kg	ND	ND	ND	ND
2-chloroethylMyl ether	8010	ug/kg	ND	ND	ND	ND
trans-1,3-Dichloropropene	8010	ug/kg	ND	ND	ND	ND
1,1,2-Trichloroethane	8010	ug/kg	ND	ND	ND	ND
Tetrachloroethene	8010	ug/kg	5.8	ND	ND	ND
Dibromochloromethane	8010	ug/kg	ND	ND	ND	ND
Chlorobenzene	8010	ug/kg	ND	ND	ND	ND
Bromoform	8010	ug/kg	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	8010	ug/kg	ND	ND	ND	ND
1,3-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND
1,4-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND
1,2-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND

**Notes:**

ND - Not Detected at method detection limit shown on attached laboratory data report sheets.

ug/kg - parts per billion.

\*Possible contamination through carry-over from HA-5.

\*\*Trichloroethylene is listed as trichloroethene in the laboratory data sheets presented in Appendix B.

Checked By

**Table 2 (continued)**  
**Summary of Soil Laboratory Analyses**  
**Modine Heat Transfer, Inc.**  
**Camdenton, Missouri**  
**Law Environmental Project Number 53-1543**

Sample Collection Date			Trip Blank 10/05/91
Parameters	EPA Method	Units	
Dichlorodifluoromethane	8010	ug/l	ND
Chloromethane	8010	ug/l	ND
Vinyl Chloride	8010	ug/l	ND
Bromomethane	8010	ug/l	ND
Chloroethane	8010	ug/l	ND
Trichlorodifluoromethane	8010	ug/l	ND
1,1-Dichloroethene	8010	ug/l	ND
Methylene Chloride	8010	ug/l	ND
trans-1,2-Dichloroethene	8010	ug/l	ND
1,1-Dichloroethene	8010	ug/l	ND
Chloroform	8010	ug/l	ND
1,1,1-Trichloroethane	8010	ug/l	ND
Carbon Tetrachloride	8010	ug/l	ND
1,2-Dichloroethane	8010	ug/l	ND
Trichloroethylene*	8010	ug/l	ND
1,2-Dichloropropane	8010	ug/l	ND
Bromodichloromethane	8010	ug/l	ND
2-Chloroethylvinyl ether	8010	ug/l	ND
cis-1,3-Dichloropropene	8010	ug/l	ND
trans-1,3-Dichloropropene	8010	ug/l	ND
1,1,2-Trichloroethane	8010	ug/l	ND
Tetrachloroethene	8010	ug/l	ND
Dibromochloromethane	8010	ug/l	ND
Chlorobenzene	8010	ug/l	ND
Bromoform	8010	ug/l	ND
1,1,2,2-Tetrachloroethane	8010	ug/l	ND
1,3-Dichlorobenzene	8010	ug/l	ND
1,4-Dichlorobenzene	8010	ug/l	ND
1,2-Dichlorobenzene	8010	ug/l	ND

**Notes:**

ND - Not Detected at method detection limit shown on attached laboratory data report sheet.

ug/l - parts per billion.

\*Trichloroethylene is listed as trichloroethene on the laboratory data sheets presented in Appendix B.

Checked By JHR

**MECHANICAL ROOM/PRETREATMENT AREA**

SOURCE:  
SITE SKETCH DEVELOPED  
BY LAW ENVIRONMENTAL 10/6/91

STORMWATER  
INLET

GRAVEL AREA

Z

**B-2 (2.0-4.3 ft.)**  
Methylene Chloride  
1,1,1-Trichloroethane

(10/6/91)  
4.8 µg/kg  
1.2 µg/kg

B-2

**B-1 (2.0-4.0 ft.)**  
(10/6/91)  
Methylene Chloride  
1,1-Dichloroethane  
1,1,1-Trichloroethane  
Trichloroethene  
Tetrachloroethene

8.4 µg/kg  
6.7 µg/kg  
160 µg/kg  
61 µg/kg  
5.8 µg/kg

B-1

**LEGEND**

● APPROXIMATE SOIL BORING  
LOCATION

◊ APPROXIMATE POWER POLE  
LOCATION

— FENCING

— = APPROXIMATE LOCATION OF  
STORM WATER DRAIN PIPE

(2.0-4.0 ft.) DEPTH FROM WHICH  
SAMPLE WAS COLLECTED

(10/6/91) DATE SAMPLE  
WAS COLLECTED

20      10      0      20      40

APPROXIMATE SCALE IN FEET

ASPHALT  
PARKING  
AREA

GRAVEL AREA

**B-3 (2.0-4.25 ft.)**  
1,1,1-Trichloroethane

(10/6/91)  
5.9 µg/kg

B-3

**B-4 (4.0-8.0 ft.)**  
(10/6/91)  
Vinyl Chloride  
trans-1,2-Dichloroethene

78 µg/kg  
12 µg/kg

B-4

DRAWN BY JBK CHECKED BY JRK

MODINE HEAT TRANSFER, INC.  
P.O. BOX 636 SUNSET DRIVE  
CAMDEN, MISSOURI  
PROJECT NO. 53-1543



LAW ENVIRONMENTAL, INC.  
ST. LOUIS, MISSOURI

AREA #2 DETAIL MAP WITH SOIL BORING  
LOCATIONS AND ANALYTICAL RESULTS  
OF SOIL SAMPLES

FIGURE 4

on

## **APPENDIX D**

### **WASTEWATER DISCHARGE PERMIT CITY OF CAMDENON, MISSOURI**

20

7

5

9

2

CITY CODE

68.691

68.691

- WASTEWATER DISCHARGER PERMIT

City of Camdenton

WASTEWATER DISCHARGE PERMIT

Permit No. 1990-1

In accordance with all terms and conditions of the Camdenton City Subchapter E - Pretreatment Regulations 68.600 Code, ~~xxxxxxxxxxxxxx~~, et.seq., and also with any applicable provision of Federal or State law or regulation. Permission Is Herby Granted To Sundstrand Tubular Products

179 Sunset Drive, Camdenton, Missouri

Classified by SIC NO.

For the contribution of pretreated wastewater

into the City of Camdenton sewer lines at 179 Sunset Drive

This permit is granted in accordance with the application filed on June 4, 1970 in the office of the City Administrator and in conformity with plans, specifications and other data submitted in support of the above application, all of which are filed with and considered as part of this permit, together with the following named conditions and requirements.

Effective this 16 day of July, 1970  
To Expire 16 day of July, 1972

Kurt J. Henn  
City Administrato:

**APPENDIX E**

**ENVIRONMENTAL SITE ASSESSMENT  
BY LAW ENVIRONMENTAL,  
NOVEMBER 1991**



## **ENVIRONMENTAL SITE ASSESSMENT**

**MODINE HEAT TRANSFER, INC.  
POST OFFICE BOX 636 SUNSET DRIVE  
CAMDENTON, MISSOURI**

### **PREPARED FOR:**

**MODINE MANUFACTURING COMPANY  
1500 DEKOVEN AVENUE  
RACINE, WISCONSIN**

### **PREPARED BY:**

**LAW ENVIRONMENTAL, INC.  
911 WASHINGTON AVENUE, SUITE 160  
ST. LOUIS, MISSOURI**

**LAW ENVIRONMENTAL PROJECT NO. 53-1543**

**NOVEMBER 1991**



## TABLE OF CONTENTS

	<u>Page Number</u>
1.0 BACKGROUND INFORMATION .....	1
2.0 PURPOSE .....	1
3.0 WORK COMPLETED .....	1
4.0 SUMMARY OF SITE CONDITIONS .....	3
4.1 Soil Description .....	3
4.2 Site Geology .....	3
4.3 Site Hydrogeology .....	3
5.0 RESULTS OF LABORATORY ANALYSES .....	4
6.0 CONCLUSIONS .....	4
7.0 RECOMMENDATIONS .....	5

### TABLES

- Table 1     Summary of Field Organic Vapor Analyses of Soil Samples  
Table 2     Summary of Soil Laboratory Analyses

### FIGURES

- Figure 1     Site Location Map  
Figure 2     Generalized Site Plan Showing Manufacturing Plant Premises  
Figure 3     Area #1 Detail Map with Hand Auger Boring Locations and Analytical Results of Soil Samples  
Figure 4     Area #2 Detail Map with Soil Boring Locations and Analytical Results of Soil Samples

### APPENDICES

- Appendix A   Soil Boring Logs  
Appendix B   Laboratory Data Sheets



## **1.0 BACKGROUND INFORMATION**

The project site is a manufacturing plant located in Camdenton, Missouri (Figure 1). The plant formerly operated as the Sundstrand Tubular Product, Inc. facility, a subsidiary of the Sundstrand Corporation, prior to the October 19, 1990 acquisition by Modine Heat Transfer, Inc., a subsidiary of the Modine Manufacturing Company. The plant is currently operating as the Modine Heat Transfer, Inc. facility producing heat transfer products, and is a RCRA generator. It is our understanding that the facility has submitted a Part B operating permit application and is currently operating under interim status.

The plant has used 1,1,1-trichloroethane (TCA) for degreasing operations since December, 1990. The plant generated trichloroethylene (TCE) waste during degreasing operations from the early 1970's to December 1990. According to information obtained from Modine Manufacturing Company, the TCE waste was containerized in 55 gallon drums and stored outside the plant in two separate locations from the early 1970's to 1983. One area of storage was located along the south outer wall of the plant where the drums were placed on a concrete pad (Area 1). The Missouri Department of Natural Resources suggested to Modine that an alleged 4,500 gallon release of spent solvent occurred at the plant. It is our understanding that a building addition was erected over the spill area in 1983. Another storage area was located along the outer west wall of the plant building (Area 2). Information pertaining to the exact location and leak history of this storage area is not readily available to Law Environmental at this time. Figure 2 is a generalized site plan showing locations of Areas 1 and 2.

## **2.0 PURPOSE**

The purpose of this project was to assess site soil in Areas 1 and 2 for the presence of TCE. The tasks performed include drilling soil borings for the purpose of collecting soil samples for laboratory analyses and preparation of this summary report.

## **3.0 WORK COMPLETED**

Five soil borings were drilled in an area where Don Mans of Modine believed the leakage of the TCE from the fifteen 55-gallon drums occurred (Area 1). Three of these borings (HA-1, HA-2, and HA-3) were drilled from the plant floor surface and two of these borings (HA-4 and HA-5) were drilled from the floor of the degreasing machine pit. The floor of the degreasing machine pit is approximately 5.5 feet below the plant floor surface. See Figure 2 for location of Area 1 and Figure 3 for a detail map of Area 1 showing boring locations. The concrete floor of the plant was cored by the use of an electric core drill. Borings were drilled and soil samples collected by the use of a hand auger. Soil samples were collected at two foot intervals to a depth at which the hand auger refused to advance.



The hand auger head was cleaned between samples by the following procedure:

- 1) Wash with non-phosphatic soap solution.
- 2) Rinse with distilled, deionized water.
- 3) Rinse with isopropanol.
- 4) Rinse with pesticide grade hexane.
- 5) Rinse with distilled, deionized water.

Boring logs were recorded and an HNU Photoionization Detector (PID) was utilized to obtain relative volatile organic vapor readings from each soil sample. This was done by placing the sample in an air-tight plastic bag, allowing the sample to volatilize and scanning the headspace in the bag with the PID. A summary of field organic vapor analyses is presented on Table 1. The sample exhibiting the highest PID meter deflection from each boring was containerized, placed on ice, and shipped to Law Environmental National Laboratories (LENL) in Kennesaw, Georgia. Each sample submitted to LENL was analyzed for halogenated volatile organics by EPA Method 8010. A trip blank was also submitted for analysis in accordance with LENL quality assurance/quality control protocol.

Four soil boring locations in Area 2 were selected based on discussions between Tom Sanicola, Don Mans and Bob King (all of Modine) and Chris Cummins and Dave Wyatt (both of Law Environmental). See Figure 2 for location of Area 2 and Figure 4 for a detail map of Area 2. According to Mr. Mans and Mr. King, a drum storage area was located along the west wall of the plant, although they could not provide the exact location of this storage area. Two borings (B-1 and B-2) were drilled in the gravel area near the west wall of the plant. A third boring (B-3) was drilled in an area that Mr. Mans believed was a former surface water drainage feature. A fourth boring (B-4) was drilled near the assumed location of a storm-water drainage pipe to assess for the possibility of contaminant migration along the pipe trench. Borings B-3 and B-4 are located in an asphalt parking area situated west of the plant building. Based on site observation and discussions between Modine and Law Environmental, it was agreed that these four boring locations would be used to assess Area 2 soils for the presence of halogenated volatile compounds. These four soil borings were drilled by the use of a truck mounted drill rig. Samples were collected with a continuous sampler rather than a split barrel sampler as outlined in Law Environmental's proposal. This was done in response to Mr. Sanicola's request. Soil samples were collected continuously below 2 feet in each boring to a depth at which the augers refused to advance. Each sample was screened and analyzed in the same manner as samples collected from Area 1, and sampling equipment was cleaned between samples using the same procedure employed in the Area 1 exploration. Excess soil auger cuttings and decontamination rinsate water from all borings were placed in 55-gallon drums and stored on-site to be disposed of by Modine at a later date. Auger cuttings and decontamination rinsate water from Area 1 were stored in separate drums from that of Area 2.



## **4.0 SUMMARY OF SITE CONDITIONS**

### **4.1 Soil Description**

Soils encountered while drilling eight of the nine borings consisted of brown, red and/or gray silty clay. Material encountered in boring HA-4 consisted of base rock under the concrete pad to a depth of 0.75 feet, where the auger refused to advance into a cherty material, possibly bedrock. Soil descriptions, including visual field Unified Soil Classification System (USCS) classifications are presented in the boring logs in Appendix A.

### **4.2 Site Geology**

Published information from the Geologic Map of Missouri indicates that the bedrock underlying the site is cherty limestone of the Roubidoux Formation of the Ordovician Series. This information correlates with material encountered in hand auger borings HA-4, and HA-5 and borings B-1, B-2, B-3 and B-4. Bedrock was apparently encountered in these borings at depths ranging from 0.75 feet to 9.0 feet.

### **4.3 Site Hydrogeology**

Water was encountered in borings HA-4 and HA-5. Water rose above the borehole in both of these borings following the completion of drilling, however, it is not known at this time if this water was actually ground water or water in a perched zone.

## **5.0 RESULTS OF LABORATORY ANALYSES**

Laboratory analyses of soil samples collected from the nine borings revealed levels of TCE ranging from 3000 parts per billion (ppb) in the sample from boring HA-1 to below detection limits (ND) in the samples from borings HA-4, B-2, B-3, and B-4. Laboratory analyses of these soil samples also revealed levels of TCA ranging from 200,000 ppb in the sample from boring HA-5 to ND in the sample from boring B-4. Methylene Chloride was detected at concentrations of 610 ppb and 4.8 ppb in the samples from borings HA-5 and B-2, respectively. Several other organic constituents revealed by EPA Method 8010 were detected sporadically or at lower concentrations in the nine soil samples. A summary of soil laboratory analyses is presented on Table 2 and illustrated on Figures 3 and 4. Laboratory data sheets are presented in Appendix B.



## 6.0 CONCLUSIONS

Based on the data collected during this study, the following conclusions have been developed. Should any of the background information or our assumptions presented in this document be determined to be in error, we should be contacted to review our conclusions.

- Geology - The subsurface soils identified during our investigation were a red silty clay with gravel and a brown and gray silty clay. Based on reviewed literature, underlying the subsurface soils is a limestone unit.
- MDNR suggested to Modine that an alledged 4500 gallon release of spent solvent occurred at the plant.
- During the course of this investigation, hazardous constituents as defined in (Appendix VIII 40 CFR 261) have been detected in the soil samples collected.
- Eleven compounds were detected in the soils around the degreaser pit area (Area 1). These compounds include:

trichloroethylene  
tetrachloroethene  
methylene chloride  
trichlorofluoromethane  
vinyl chloride  
1,1-dichloroethene  
1,1,1-trichloroethane  
1,2-dichloroethane  
trans-1,3-dichloropropene  
1,1,2-trichloroethane  
chloroform

- Seven compounds were detected in the soils outside in the area west of the mechanical room/pre-treatment area (Area 2). The compounds are:

methylene chloride  
vinyl chloride  
1,1,1-trichloroethane  
trans-1,2,dichlorothene  
trichloroethylene  
1,1-dichloroethane  
tetrachloroethene



- The horizontal and vertical extent of the constituents in the soil have not been defined.
- Ground-water was not addressed in this assessment.
- The precise source and source material characteristics of the constituent released are unknown at this time.

## 7.0 RECOMMENDATIONS

Based on the results of this study, the following recommendations have been developed. Should any of the referenced background information or our assumptions be determined to be error, the following recommendations should be reviewed and re-evaluated.

- Prepare and execute a workplan that will define the following:
  - Horizontal and vertical extent of the constituents found in the soils at the site and rate of transport.
  - Develop a detailed geological and hydrogeological characterization of the site.
  - Assess ground water at the site for the presence of constituents detected in the soil.
- The precise source and source material characteristics of the constituents that were released should be determined.
- A regulatory strategy for the facility based on the results of the recommended additional assessment and on the characterization of the source and source materials of detected constituents should be developed.

**Table 1**  
**Summary of Field Organic Vapor Analyses**  
**of Soil Samples**  
**Modine Heat Transfer, Inc.**  
**Camdenton, Missouri**  
**Law Environmental Project Number 53-1543**

Boring Designation	Sample Depth (Feet)	Organic Vapor Reading
HA-1	1.0 - 2.0 *2.0 - 4.0 4.0 - 4.75	6.0 25 7.0
HA-2	1.0 - 2.0 2.0 - 4.0 *4.0 - 4.3	6.0 5.0 7.0
HA-3	*1.0 - 2.0 2.0 - 3.5	9.0 6.0
HA-4	*0.4 - 0.75	2.0
HA-5	*0.5 - 2.0 2.0 - 2.8	42 30
B-1	*2.0 - 4.0 4.0 - 6.5	8.2 6.8
B-2	*2.0 - 4.0 4.0 - 8.5	8.2 7.4
B-3	*2.0 - 4.0 4.0 - 7.5	48 15.4
B-4	2.0 - 4.0 *4.0 - 8.0	58 175

Notes:

Organic vapor readings measured with an HNU Photoionization Detector equipped with a 10.2 eV lamp. Instrument units are in parts per million (ppm) total organic vapors.

\*Sample submitted for laboratory analysis.

Checked By DHR

**Table 2**  
**Summary of Soil Laboratory Analyses**  
**Modine Heat Transfer, Inc.**  
**Camdenton, Missouri**  
**Law Environmental Project Number 53-1543**

Sample I.D. Sample Depth (Feet) Collection Date			HA-1 2.0-4.0 10/05/91	HA-2 4.0-4.3 10/05/91	HA-3 0-2.0 10/05/91	HA-4 0-0.75 10/06/91	HA-5 0-2.0 10/06/91	B-1 2.0-4.0 10/08/91	B-2 2.0-4.3 10/08/91	B-3 2.0-4.0 10/08/91	B-4 4.0-6.0 10/08/91
Parameters	EPA Method	Units									
Chloromethane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	8010	ug/kg	ND	ND	ND	ND	27	ND	ND	ND	78
Chloroethane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	8010	ug/kg	ND	ND	ND	ND	11	ND	ND	ND	ND
1,1-Dichloroethene	8010	ug/kg	ND	ND	4.1	ND	ND	ND	ND	ND	ND
Methylene Chloride	8010	ug/kg	ND	ND	ND	ND	610	*8.4	4.8	ND	ND
trans-1,2-Dichloroethene	8010	ug/kg	ND	ND	ND	ND	16	ND	ND	ND	12
1,1-Dichloroethane	8010	ug/kg	ND	ND	ND	ND	72	6.2	ND	ND	ND
Chloroform	8010	ug/kg	1.8	ND	ND	ND	83	ND	ND	ND	ND
1,1,1-Trichloroethane	8010	ug/kg	550	14	18	1.8	200,000	160	1.2	5.9	ND
Carbon Tetrachloride	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	8010	ug/kg	ND	ND	ND	ND	420	ND	ND	ND	ND
Trichloroethylene**	8010	ug/kg	3000	29	10	ND	780	61	ND	ND	ND
1,2-Dichloropropane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	8010	ug/kg	ND	ND	ND	ND	27	ND	ND	ND	ND
Tetrachloroethene	8010	ug/kg	36	ND	ND	ND	130	5.8	ND	ND	ND
Dibromochloromethane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	8010	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ND - Not Detected at method detection limit shown on attached laboratory data report sheets.

ug/kg - parts per billion.

\*Possible contamination through carry-over from HA-5.

\*\*Trichloroethylene is listed as trichloroethene in the laboratory data sheets presented

in Appendix B.

Checked By JYL

**Table 2 (continued)**  
**Summary of Soil Laboratory Analyses**  
**Modine Heat Transfer, Inc.**  
**Camdenton, Missouri**  
**Law Environmental Project Number 53-1543**

Sample Collection Date			Trip Blank 10/05/91
Parameters	EPA Method	Units	
Dichlorodifluoromethane	8010	ug/l	ND
Chloromethane	8010	ug/l	ND
Vinyl Chloride	8010	ug/l	ND
Bromomethane	8010	ug/l	ND
Chloroethane	8010	ug/l	ND
Trichlorodifluoromethane	8010	ug/l	ND
1,1-Dichloroethene	8010	ug/l	ND
Methylene Chloride	8010	ug/l	ND
trans-1,2-Dichloroethene	8010	ug/l	ND
1,1-Dichloroethene	8010	ug/l	ND
Chloroform	8010	ug/l	ND
1,1,1-Trichloroethane	8010	ug/l	ND
Carbon Tetrachloride	8010	ug/l	ND
1,2-Dichloroethane	8010	ug/l	ND
Trichloroethylene*	8010	ug/l	ND
1,2-Dichloropropane	8010	ug/l	ND
Bromodichloromethane	8010	ug/l	ND
2-Chloroethylvinyl ether	8010	ug/l	ND
cis-1,3-Dichloropropene	8010	ug/l	ND
trans-1,3-Dichloropropene	8010	ug/l	ND
1,1,2-Trichloroethane	8010	ug/l	ND
Tetrachloroethene	8010	ug/l	ND
Dibromochloromethane	8010	ug/l	ND
Chlorobenzene	8010	ug/l	ND
Bromoform	8010	ug/l	ND
1,1,2,2-Tetrachloroethane	8010	ug/l	ND
1,3-Dichlorobenzene	8010	ug/l	ND
1,4-Dichlorobenzene	8010	ug/l	ND
1,2-Dichlorobenzene	8010	ug/l	ND

**Notes:**

ND - Not Detected at method detection limit shown on attached laboratory data report sheet.

ug/l - parts per billion.

\*Trichloroethylene is listed as trichloroethene on the laboratory data sheets presented in Appendix B.

Checked By JHR



A horizontal scale bar with three numerical markings: 0, 0.5, and 1.0. The markings are evenly spaced along a thick black line.

**9      1999      2000      3999      4999      5999**

~~APPROXIMATE SCALE IN FEET~~

SOURCE:  
U.S. GEOLOGICAL SURVEY  
GREEN BAY TERRACE (1983) &  
CAMDENTON, MO (1983) QUADRANGLES  
7.5 MINUTE SERIES (TOPOGRAPHIC)



DRAWN BY 13K CHECKED BY DWJ

**MODINE HEAT TRANSFER, INC.  
P.O. BOX 636 SUNSET DRIVE  
CAMDENON, MISSOURI  
PROJECT NO. 53-1543**



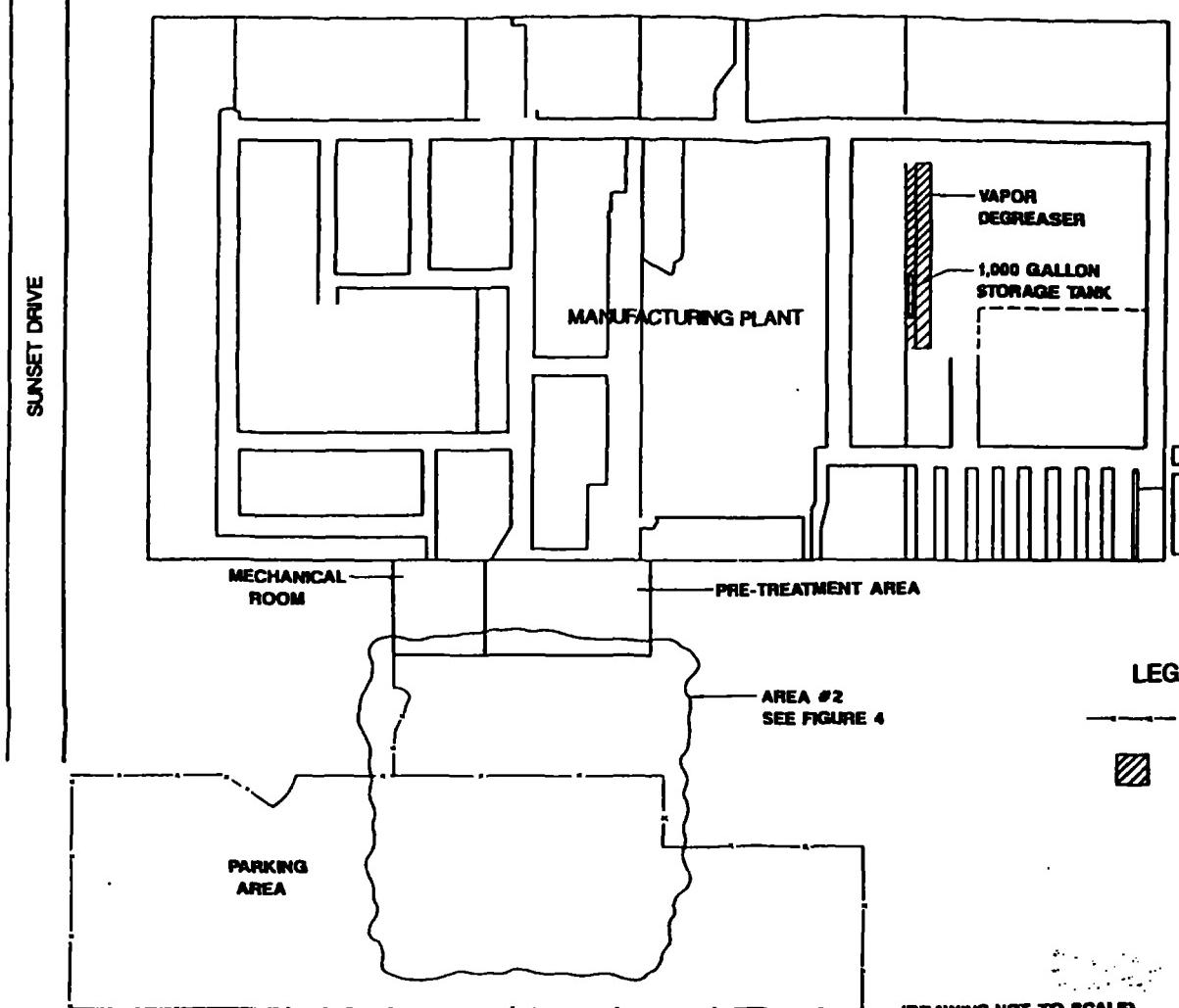
**LAW ENVIRONMENTAL, INC.**

## SITE LOCATION MAP

**FIGURE 1**

SOURCE:  
DELTA ENVIRONMENTAL CONSULTANTS  
SITE MAP  
FILE NAME 90801-2  
DATED 9/28/90

Z



(DRAWING NOT TO SCALE)

DRAWN BY J.C. CHECKED BY D.L.W.

MODINE HEAT TRANSFER, INC.  
P.O. BOX 636 SUNSET DRIVE  
CAMDENTON, MISSOURI  
PROJECT NO. 53-1543



LAW ENVIRONMENTAL  
INC.  
ST. LOUIS, MISSOURI

GENERALIZED SITE PLAN SHOWING  
MANUFACTURING PLANT PREMISES

FIGURE 1

SOURCE:  
SITE SKETCH DEVELOPED  
BY LAW ENVIRONMENTAL 10/6/91

Z

HA-3 (0.0-2.0 ft.)	(10/5/91)
1,1,-Dichloroethene	4.1 $\mu\text{g}/\text{kg}$
1,1,1-Trichloroethane	18 $\mu\text{g}/\text{kg}$
Trichloroethene	10 $\mu\text{g}/\text{kg}$

HA-3

HA-2 (4.0-4.5 ft.)	(10/5/91)
1,1,1-Trichloroethane	14 $\mu\text{g}/\text{kg}$
Trichloroethene	29 $\mu\text{g}/\text{kg}$

HA-2

HA-1 (2.0-4.0 ft.)	(10/5/91)
Chloroform	1.8 $\mu\text{g}/\text{kg}$
1,1,1-Trichloroethane	550 $\mu\text{g}/\text{kg}$
Trichloroethene	3000 $\mu\text{g}/\text{kg}$
Tetrachloroethene	36 $\mu\text{g}/\text{kg}$

HA-1

1

HA-5 (0.0-2.0 ft.)	(10/6/91)
Vinyl Chloride	27 $\mu\text{g}/\text{kg}$
Trichlorofluoromethane	11 $\mu\text{g}/\text{kg}$
Methylene Chloride	610 $\mu\text{g}/\text{kg}$
trans-1,2-Dichloroethene	16 $\mu\text{g}/\text{kg}$
1,1-Dichloroethane	72 $\mu\text{g}/\text{kg}$
Chloroform	83 $\mu\text{g}/\text{kg}$
1,1,1-Trichloroethane	200,000 $\mu\text{g}/\text{kg}$
1,2-Dichloroethane	420 $\mu\text{g}/\text{kg}$
Trichloroethene	780 $\mu\text{g}/\text{kg}$
1,1,2-Trichloroethane	27 $\mu\text{g}/\text{kg}$
Tetrachloroethene	130 $\mu\text{g}/\text{kg}$

HA-5

HA-4 (0.0-0.75 ft.)	(10/6/91)
1,1,1-Trichloroethane	1.8 $\mu\text{g}/\text{kg}$

HA-4

1 1,000 GALLON ABOVE GROUND  
STORAGE TANK (CONTAINING  
1,1,1-TRICHLOROETHANE)

● APPROXIMATE LOCATION OF  
HAND AUGER BORINGS

□ VAPOR DEGREASER PIT  
(5.5 FT. BELOW  
PLANT FLOOR SURFACE)

□ VAPOR DEGREASER MACHINE

— FORMER OUTER WALL OF  
FIRST BUILDING ADDITION

ug/kg PARTS PER BILLION  
(2.0-4.0 ft.) DEPTH FROM WHICH  
SAMPLE WAS COLLECTED  
(10/5/91) DATE SAMPLE  
WAS COLLECTED

DRAWN BY SLK CHECKED BY JH

10 5 0 10 20

APPROXIMATE SCALE IN FEET

MODINE HEAT TRANSFER, INC.  
P.O. BOX 636 SUNSET DRIVE  
CAMDEN, MISSOURI  
PROJECT NO. 53-1543



LAW ENVIRONMENTAL, INC.  
ST. LOUIS, MISSOURI

AREA #1 DETAIL MAP WITH  
HAND AUGER BORING LOCATIONS  
AND ANALYTICAL RESULTS OF  
SOIL SAMPLES  
FIGURE 3

# MECHANICAL ROOM/PRETREATMENT AREA

SOURCE:  
SITE SKETCH DEVELOPED  
BY LAW ENVIRONMENTAL 10/6/91

Z

STORMWATER  
INLET

B-2

GRAVEL AREA

(10/8/91)

B-1 (2.0-4.0 ft.)  
Methylene Chloride  
1,1-Dichloroethane  
1,1,1-Trichloroethane  
Trichloroethene  
Tetrachloroethene

8.4  $\mu\text{g}/\text{kg}$   
6.2  $\mu\text{g}/\text{kg}$   
16.0  $\mu\text{g}/\text{kg}$   
61  $\mu\text{g}/\text{kg}$   
5.6  $\mu\text{g}/\text{kg}$

B-2 (2.0-4.3 ft.)  
Methylene Chloride  
1,1,1-Trichloroethane

(10/8/91)  
4.8  $\mu\text{g}/\text{kg}$   
1.2  $\mu\text{g}/\text{kg}$

B-1

## LEGEND

● APPROXIMATE SOIL BORING  
LOCATION

○ APPROXIMATE POWER POLE  
LOCATION

— FENCING

— APPROXIMATE LOCATION OF  
STORM WATER DRAIN PIPE

(2.0-4.0 ft.) DEPTH FROM WHICH  
SAMPLE WAS COLLECTED

(10/8/91) DATE SAMPLE  
WAS COLLECTED

20    10    0    20    40

APPROXIMATE SCALE IN FEET

ASPHALT  
PARKING  
AREA

GRAVEL AREA

B-4 (4.0-8.0 ft.)  
Vinyl Chloride  
trans-1,2-Dichloroethene

(10/8/91)  
78  $\mu\text{g}/\text{kg}$   
12  $\mu\text{g}/\text{kg}$

B-3 (2.0-4.25 ft.)  
1,1,1-Trichloroethane

(10/8/91)  
5.9  $\mu\text{g}/\text{kg}$

B-4



LAW ENVIRONMENTAL, INC.  
ST. LOUIS, MISSOURI

MODINE HEAT TRANSFER, INC.  
P.O. BOX 636 SUNSET DRIVE  
CAMDEN, MISSOURI  
PROJECT NO. 53-1543

AREA #2 DETAIL MAP WITH SOIL BORING  
LOCATIONS AND ANALYTICAL RESULTS  
OF SOIL SAMPLES

DRAWN BY JRK CHECKED BY JHR

FIGURE 4



**APPENDIX A**  
**Soil Boring Logs**

## TEST BORING RECORD KEY

### CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

#### NO. OF BLOWS, (N)

#### RELATIVE DENSITY

##### Non Cohesive

0 - 4  
4 - 10  
10 - 30  
30 - 50  
Over 50

VL - Very Loose  
L - Loose  
F - Firm  
D - Dense  
VD - Very Dense

##### Cohesive

0 - 2  
2 - 4  
4 - 8  
8 - 15  
15 - 30  
31 - 50  
Over 50

CONSISTENCY  
VS - Very Soft  
S - Soft  
F - Firm  
T - Stiff  
VT - Very Stiff  
H - Hard

### KEY TO ABBREVIATIONS

#### MOISTURE CONTENT

#### CLASSIFICATION MODIFIERS

D - Dry  
P - Damp  
M - Moist  
W - Wet  
S - Saturated

Trace - 0-5%  
Little - 6-15%  
Some - 15-30%  
And - 31-50%

▽ Water Level at Time of Drilling  
▼ Water Level after 24 Hours

BGL - Below Ground Level  
WH - Weight of Hammer



LAW ENVIRONMENTAL  
911 WASHINGTON AVENUE  
SUITE 160  
ST. LOUIS, MISSOURI 63101  
(314) 621-9334

## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► HA-1	Modine Heat Transfer, Inc.
DATE ► 10/5/81	Camdenton, MO #53-1643
LOGGED BY ► DWW/CHC	DRILLED BY ► Law Environmental
DRILLING METHOD ► Hand Auger	SAMPLING METHOD ► Hand Auger

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 eV lamp. | HOLE DIA. 3.8 In.  
TOTAL DEPTH 4.6 Ft.

HEADSPACE READING (ppm)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inchess)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
6.0	M		1	0			4-inch concrete slab.		
				1			8-inch concrete slab.		
				2			Gravel base.		
25	M		*2	3			Red silty CLAY (CL) with gravel.		
				4			Brown and gray silty CLAY (CL).		
7.0	M		3				Exploration terminated at 4.6 Ft. due to auger refusal.		
							Ground water not encountered during exploration.		
							* Sample submitted for analysis.		



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## TEST BORING RECORD

PAGE 1 OF 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► HA-2	Modine Heat Transfer, Inc.
DATE ► 10/6/81	Camdenton, MO #63-1543
LOGGED BY ► CHC/DWJ	DRILLED BY ► Law Environmental
DRILLING METHOD ► Hand Auger	SAMPLING METHOD ► Hand Auger

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 mV lamp. HOLE DIA. 3.8 in.

TOTAL DEPTH 4.3 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS	
6.0	M-D		1	0			4-inch concrete slab. 8-inch concrete slab. Red silty CLAY (CL) with gravel.		Exploration terminated at 4.3 Ft. due to auger refusal.  Ground water not encountered during exploration.  * Sample submitted for laboratory analysis.	
				1						
				2						
5.0	D		2	3						
				4						
7.0	D		#2							



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## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► HA-3	Modine Heat Transfer, Inc.
DATE ► 10/6/81	Camdenton, MO #63-1543
LOGGED BY ► CHC/DWW	DRILLED BY ► Law Environmental
DRILLING METHOD ► Hand Auger	SAMPLING METHOD ► Hand Auger

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 mV lamp. HOLE DIA. 3.0 In.  
 TOTAL DEPTH 3.5 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
9.0	M-D		*1	0			4-inch concrete slab.		Exploration terminated at 3.5 Ft. due to auger refusal.  Ground water not encountered during exploration.  * Sample submitted for laboratory analysis.
				1			8-inch concrete slab.		
6.0	D		2	2			Red silty CLAY (CL).		
				3			Brown and gray silty CLAY (CL).		



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## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► HA-4	Modine Heat Transfer, Inc.
DATE ► 10/8/81	Camdenton, MO #63-1643
LOGGED BY ► D. Wyatt	DRILLED BY ► Law Environmental
DRILLING METHOD ► Hand Auger	SAMPLING METHOD ► Hand Auger

COMMENTS: Headspace reading measured with an HNU PID using a 18.2 mV lamp. HOLE DIA. 3.8 In.

HOLE DIA. 3.8 In.

TOTAL DEPTH .75 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY	REMARKS
2.0	W		*1	0	-	-	Concrete slab. Base rock.  Exploration terminated at .75 Ft. due to auger refusal.  Ground water rose above borehole following completion of boring.  * Sample submitted for laboratory analysis.	



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## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► HA-6	Modine Heat Transfer, Inc.
DATE ► 10/6/91	Camdenton, MO #63-1643
LOGGED BY ► D. Wyatt	DRILLED BY ► Law Environmental
DRILLING METHOD ► Hand Auger	SAMPLING METHOD ► Hand Auger

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 eV lamp. HOLE DIA. 3.0 In.  
TOTAL DEPTH 2.8 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
							0	1	
42	W		*1	0	-	-	Concrete slab.	-	
				1	-	-		-	
				2	-	-	Red silty CLAY (CL).	-	
30	W		*	1	-	-	Exploration terminated at 2.8 Ft. due to auger refusal.		
							Ground water rose above borehole following completion of boring.		
							* Sample submitted for laboratory analysis.		



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## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► B-1	Modine Heat Transfer, Inc.
DATE ► 10/8/91	Camdenton, MO #53-1543
LOGGED BY ► D. Wyatt	DRILLED BY ► Layne Western
DRILLING METHOD ► HSA	SAMPLING METHOD ► Cont. Sampler

COMMENTS: Headspace reading measured with an HNU PID using a 18.2 eV lamp. HOLE DIA. 6.0 In.

TOTAL DEPTH 6.5 Ft.

HEADSPACE READING (ppm)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS	
8.2	P-M		*1	0			.. Gravel.		Exploration terminated at 6.5 Ft. due to auger refusal.  Ground water not encountered during exploration.  * Sample submitted for laboratory analysis.	
				1			Red silty CLAY (CL), some gravel.			
6.8	P-M		2	2			Gray silty CLAY (CL).			
				3	24		Red silty CLAY (CL) and gravel.			
				4			Fragmented chert particles.			
				5	30					
				6						



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## TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► B-2	Modine Heat Transfer, Inc.
DATE ► 10/8/91	Camdenton, MO #63-1543
LOGGED BY ► D. Wyatt	DRILLED BY ► Layne Western
DRILLING METHOD ► HSA	SAMPLING METHOD ► Cont. Sampler

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 eV lamp. | HOLE DIA. 6.8 In.

TOTAL DEPTH 8.5 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
8.2	P		*1	0			Gravel.		
				1					
7.4	P		2	2	28		Gray silty CLAY (CL) with organics.		
				3					
				4					
				5	13		Brown and gray silty CLAY (CL) with gravel.		
				6					
				7					
				8			Fragmented chert particles.		
							Exploration terminated at 8.5 due to auger refusal.		
							Ground water not encountered during exploration.		
							* Sample submitted for laboratory analysis.		



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# TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► B-3	Modine Heat Transfer, Inc.
DATE ► 10/8/91	Camdenton, MO #53-1543
LOGGED BY ► D. Wyatt	DRILLED BY ► Layne Western
DRILLING METHOD ► HSA	SAMPLING METHOD ► Cont. Sampler

COMMENTS: Headspace reading measured with an HNU PID using a 10.2 mV lamp. HOLE DIA. 6.8 In.

TOTAL DEPTH 7.5 Ft.

HEADSPACE READING (PPM)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
48	P		*1	0			Asphalt.		
				1			Gravel base.		
				2			Brown and red silty CLAY (CL) with gravel.		
				3	16		Gray with brown silty CLAY (CL), with gravel.		
				4			Gray silty CLAY (CL), little organics.		
				5	23		Brown silty CLAY (CL), some fractured chert.		
				6			Brown silty CLAY (CL) with fractured chert particles.		
15.4	P-D		2	7			Exploration terminated at 7.5 Ft. due to auger refusal.		
							Ground water not encountered during exploration.		
							* Sample submitted for laboratory analysis.		



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# TEST BORING RECORD

PAGE 1 of 1

CLIENT ► Modine	LOCATION ►
BORING NO. ► B-4	Modine Heat Transfer, Inc.
DATE ► 10/8/91	Camdenton, MO #63-1543
LOGGED BY ► D. Wyatt	DRILLED BY ► Layne Western
DRILLING METHOD ► HSA	SAMPLING METHOD ► Cont. Sampler

COMMENTS: Headspace reading measured with an HNU PID using a 18.2 mV lamp.	HOLE DIA. 6.8 In.
	TOTAL DEPTH 9.0 Ft.

HEADSPACE READING (ppm)	MOISTURE CONTENT	DENSITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY (inches*)	PENETRATION RESISTANCE	STRATIGRAPHY		REMARKS
58	P			0			Asphalt.		
				1			Gravel base.		
				2			Brown silty CLAY (CL) with gravel.		
			1	3	25		Gray silty CLAY (CL).		
				4			Brown silty CLAY (CL).		
175	P		*2	5	27		Brown silty CLAY (CL) with gravel, with organics.		
				6			Gray silty CLAY (CL) with gravel.		
				7					
				8					
				9			Fragmented chert particles.		
							Exploration terminated at 9.0 Ft. due to auger refusal.		
							Ground water not encountered during exploration.		
							* Sample submitted for laboratory analysis.		



**APPENDIX B**  
**Laboratory Data Sheets**



LAW ENVIRONMENTAL, INC.

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112 TOWNPARK DRIVE  
KENNESAW, GEORGIA 30144-5599  
404-421-3400

---

October 29, 1991

Law Environmental, Inc.  
911 Washington Ave. Suite 160  
St. Louis, MO. 63101

Attention: Chris Cummings

LE Job Number: 53-1543

Subject: Revised chemical analysis of samples received on 10/10/91.

Dear Mr. Cummings:

Law Environmental National Laboratories has revised its analysis of your samples and reports the results on the following pages. These results relate only to the contents of the samples as submitted. This report shall not be reproduced except in full without the approval of Law Environmental National Laboratories.

If there are any questions, please do not hesitate to contact us.

Sincerely,

LAW ENVIRONMENTAL NATL LABS

  
Clifford H. McBride  
QC/Coordinator

Attachment: Data Report

## TEST DATA REPORT

Date 10/21/91  
Page 1

## --- Project Information ---

Lab Number : 91-1072-01  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : HA-1 2.0'-4.0'  
Matrix : SO  
Type : COMP  
Collector : DWW

Sampled Date/Time : 10/05/91 13:30  
Received Date/Time : 10/10/91 11:40  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
<b>-- INORGANIC CHEMISTRY RESULTS --</b>						
Moisture (Oven Dried @ 105C)	EPA 160.3M	%	1	24	10/15/91	BC
<b>-- GC ORGANIC ANALYSIS RESULTS --</b>						
Chloromethane	EPA 8010	ug/kg	0.96	ND	10/11/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	2.2	ND	10/11/91	DCE
Chloroethane	EPA 8010	ug/kg	6.2	ND	10/11/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	3.8	ND	10/11/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.6	ND	10/11/91	DCE
Methylene Chloride	EPA 8010	ug/kg	3.0	ND	10/11/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.2	ND	10/11/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.84	ND	10/11/91	DCE
Chloroform	EPA 8010	ug/kg	0.60	1.8	10/14/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.36	550	10/11/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.4	ND	10/11/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.36	ND	10/11/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.4	3000	10/14/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.48	ND	10/11/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.2	ND	10/11/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.6	ND	10/11/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	4.1	ND	10/11/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.24	ND	10/11/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.36	36	10/11/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.08	ND	10/11/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.0	ND	10/11/91	DCE
Bromoform	EPA 8010	ug/kg	2.4	ND	10/11/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.36	ND	10/11/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.4	ND	10/11/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	1.8	ND	10/11/91	DCE

Signed



ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91  
Page 2

Lab Number : 91-1072-01  
Project No. : 53-1543

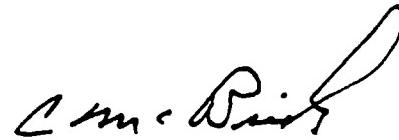
--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene                    EPA 8010    ug/kg    2.4                    ND                    10/11/91    DCE

Signed

  
C. M. Bush

LAW ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91  
Page 1

--- Project Information ---

Lab Number : 91-1072-02  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

--- Sample Information ---

Station ID : HA-2 4.0'-4.3'  
Matrix : SO  
Type : COMP  
Collector : DWW

Sampled Date/Time : 10/05/91 16:21  
Received Date/Time : 10/10/91 11:46  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal.

-- INORGANIC CHEMISTRY RESULTS --  
Moisture (Oven Dried @ 105C)

EPA 160.3M % 1 16 10/15/91 BC

-- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	0.80	ND	10/11/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	1.8	ND	10/11/91	DCE
Chloroethane	EPA 8010	ug/kg	5.2	ND	10/11/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	3.2	ND	10/11/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.3	ND	10/11/91	DCE
Methylene Chloride	EPA 8010	ug/kg	2.5	ND	10/11/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.0	ND	10/11/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.70	ND	10/11/91	DCE
Chloroform	EPA 8010	ug/kg	0.50	ND	10/11/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.30	14	10/11/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.2	ND	10/11/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.30	ND	10/11/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.2	29	10/11/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.40	ND	10/11/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.0	ND	10/11/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.3	ND	10/11/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	3.4	ND	10/11/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.20	ND	10/11/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.30	ND	10/11/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	0.90	ND	10/11/91	DCE
Chlorobenzene	EPA 8010	ug/kg	2.5	ND	10/11/91	DCE
Bromoform	EPA 8010	ug/kg	2.0	ND	10/11/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.30	ND	10/11/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.0	ND	10/11/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	1.5	ND	10/11/91	DCE

Signed



LAW ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91  
Page 2

Lab Number : 91-1072-02  
Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene	EPA 8010	ug/kg	2.0	ND	10/11/91	DCE
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Signed



C. McRitchie

U.S. ENVIRONMENTAL PROTECTION AGENCY  
TEST DATA REPORT

Date 10/21/91  
Page 1

--- Project Information ---

Lab Number : 91-1072-03  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

--- Sample Information ---

Station ID : HA-3 0'-2.0'  
Matrix : SO  
Type : COMP  
Collector : DWW

Sampled Date/Time : 10/05/91 18:15  
Received Date/Time : 10/10/91 11:40  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal.

-- INORGANIC CHEMISTRY RESULTS --

Moisture (Oven Dried @ 105C) EPA 160.3M % 1 21 10/15/91 BC

-- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	0.96	ND	10/11/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	2.2	ND	10/11/91	DCE
Chloroethane	EPA 8010	ug/kg	6.2	ND	10/11/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	3.8	ND	10/11/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.6	4.1	10/11/91	DCE
Methylene Chloride	EPA 8010	ug/kg	3.0	ND	10/11/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.2	ND	10/11/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.84	ND	10/11/91	DCE
Chloroform	EPA 8010	ug/kg	0.60	ND	10/11/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.36	18	10/11/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.4	ND	10/11/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.36	ND	10/11/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.4	10	10/11/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.48	ND	10/11/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.2	ND	10/11/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.6	ND	10/11/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	4.1	ND	10/11/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.24	ND	10/11/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.36	ND	10/11/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.08	ND	10/11/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.0	ND	10/11/91	DCE
Bromoform	EPA 8010	ug/kg	2.4	ND	10/11/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.36	ND	10/11/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.4	ND	10/11/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	1.8	ND	10/11/91	DCE

Signed

*Chris Cummins*

LAW ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-03  
Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene	EPA 8010	ug/kg	2.4	ND	10/11/91	DCE
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Signed

C m'Brick

## TEST DATA REPORT

Date 10/21/91

Page 1

## --- Project Information ---

Lab Number : 91-1072-04  
 Project No. : 53-1543  
 Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : HA-4 0'-0.75'  
 Matrix : SO  
 Type : COMP  
 Collector : DWW

Sampled Date/Time : 10/06/91 11:30  
 Received Date/Time : 10/10/91 11:40  
 Received From/By : DWW/LD  
 Chain of Custody : 7267  
 Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal

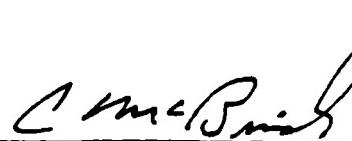
-- INORGANIC CHEMISTRY RESULTS --  
Moisture (Oven Dried @ 105C)

EPA 160.3M % 1 5.7 10/15/91 BC

## -- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	0.80	ND	10/14/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	1.8	ND	10/14/91	DCE
Chloroethane	EPA 8010	ug/kg	5.2	ND	10/14/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	3.2	ND	10/14/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.3	ND	10/14/91	DCE
Methylene Chloride	EPA 8010	ug/kg	2.5	ND	10/14/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.0	ND	10/14/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.70	ND	10/14/91	DCE
Chloroform	EPA 8010	ug/kg	0.50	ND	10/14/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.30	1.8	10/14/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.2	ND	10/14/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.30	ND	10/14/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.2	ND	10/14/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.40	ND	10/14/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.0	ND	10/14/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.3	ND	10/14/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	3.4	ND	10/14/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.20	ND	10/14/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.30	ND	10/14/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	0.90	ND	10/14/91	DCE
Chlorobenzene	EPA 8010	ug/kg	2.5	ND	10/14/91	DCE
Bromocform	EPA 8010	ug/kg	2.0	ND	10/14/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.30	ND	10/14/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.0	ND	10/14/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	1.5	ND	10/14/91	DCE

Signed



TEST DATA REPORT

Date 10/21/91  
Page 2

Lab Number : 91-1072-04  
Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene                   EPA 8010   ug/kg  2.0              ND              10/14/91  DCE

Signed



U.S. ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91  
Page 1

--- Project Information ---

Lab Number : 91-1072-05  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

--- Sample Information ---

Station ID : HA-5 0'-2.0'  
Matrix : SO  
Type : COMP  
Collector : DWW

Sampled Date/Time : 10/06/91 16:00  
Received Date/Time : 10/10/91 11:40  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- INORGANIC CHEMISTRY RESULTS --

Moisture (Oven Dried @ 105C) EPA 160.3M % 1 32 10/15/91 BC

-- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	1.12	ND	10/11/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	2.5	27	10/11/91	DCE
Chloroethane	EPA 8010	ug/kg	7.3	ND	10/11/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	4.5	11	10/11/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.8	ND	10/14/91	DCE
Methylene Chloride	EPA 8010	ug/kg	3.5	610	10/14/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.4	16	10/11/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.98	72	10/14/91	DCE
Chloroform	EPA 8010	ug/kg	0.70	83	10/11/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.42	200000	10/17/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.7	ND	10/11/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.42	420	10/14/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.7	780	10/14/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.56	ND	10/11/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.4	ND	10/11/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.8	ND	10/11/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	4.8	ND	10/11/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.28	27	10/11/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.42	130	10/14/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.26	ND	10/11/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.5	ND	10/11/91	DCE
Bromoform	EPA 8010	ug/kg	2.8	ND	10/11/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.42	ND	10/11/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.8	ND	10/11/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	2.1	ND	10/11/91	DCE

Signed



TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-05  
Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene                    EPA 8010    ug/kg    2.8                    ND                    10/11/91    DCE

Signed



## TEST DATA REPORT

Date 10/21/91

Page 1

## --- Project Information ---

Lab Number : 91-1072-06  
 Project No. : 53-1543  
 Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : B-1 2.0'-4.0'  
 Matrix : SO  
 Type : COMP  
 Collector : DWW

Sampled Date/Time : 10/08/91 10:05  
 Received Date/Time : 10/10/91 11:40  
 Received From/By : DWW/LD  
 Chain of Custody : 7267  
 Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

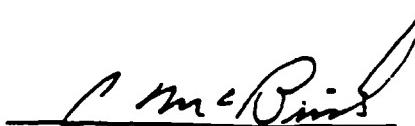
## -- INORGANIC CHEMISTRY RESULTS --

Moisture (Oven Dried @ 105C) EPA 160.3M % 1 22 10/15/91 BC

## -- GC ORGANIC ANALYSIS RESULTS --

	EPA 8010	ug/kg	1.15	ND	10/12/91	DCE
Chloromethane	EPA 8010	ug/kg	2.6	ND	10/12/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	7.4	ND	10/12/91	DCE
Chloroethane	EPA 8010	ug/kg	4.6	ND	10/12/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	1.9	ND	10/14/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	3.6	8.4	10/12/91	DCE
Methylene Chloride	EPA 8010	ug/kg	1.4	ND	10/12/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.01	6.2	10/12/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	0.72	ND	10/12/91	DCE
Chloroform	EPA 8010	ug/kg	0.43	160	10/14/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	1.7	ND	10/12/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	1.7	61	10/12/91	DCE
Trichloroethene	EPA 8010	ug/kg	0.58	ND	10/12/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	1.4	ND	10/12/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.9	ND	10/12/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	4.9	ND	10/12/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	0.29	ND	10/12/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.29	ND	10/12/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.43	5.8	10/12/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.30	ND	10/12/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.6	ND	10/12/91	DCE
Bromoform	EPA 8010	ug/kg	2.9	ND	10/12/91	DCE
1,1,2,2-Tetrachlorosthane	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.9	ND	10/12/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	2.2	ND	10/12/91	DCE

Signed



TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-06

Project No. : 53-1543

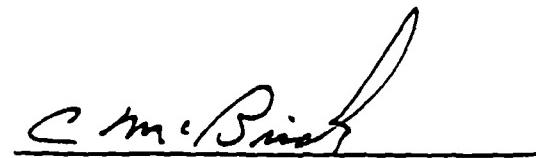
--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene	EPA 8010	ug/kg	2.9	ND	10/12/91	DCE
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Signed

  
C. McBrish

## TEST DATA REPORT

Date 10/21/91  
Page 1

## --- Project Information ---

Lab Number : 91-1072-07  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : B-2 2.0'-4.3'  
Matrix : SO  
Type : COMP  
Collector : DWW

Sampled Date/Time : 10/08/91 11:10  
Received Date/Time : 10/10/91 11:40  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

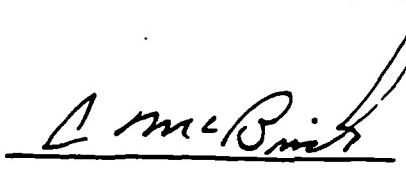
## -- INORGANIC CHEMISTRY RESULTS --

Moisture (Oven Dried @ 105C)	EPA 160.3M %	1	16	10/15/91	SC
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## -- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	1.15	ND	10/14/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	2.6	ND	10/14/91	DCE
Chloroethane	EPA 8010	ug/kg	7.4	ND	10/14/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	4.6	ND	10/14/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.9	ND	10/14/91	DCE
Methylene Chloride	EPA 8010	ug/kg	3.6	4.8	10/14/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.4	ND	10/14/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	1.01	ND	10/14/91	DCE
Chloroform	EPA 8010	ug/kg	0.72	ND	10/14/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.43	1.2	10/14/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.7	ND	10/14/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.43	ND	10/14/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.7	ND	10/14/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.58	ND	10/14/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.4	ND	10/14/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.9	ND	10/14/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	4.9	ND	10/14/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.29	ND	10/14/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.43	ND	10/14/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.30	ND	10/14/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.6	ND	10/14/91	DCE
Bromoform	EPA 8010	ug/kg	2.9	ND	10/14/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.43	ND	10/14/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.9	ND	10/14/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	2.2	ND	10/14/91	DCE

Signed



TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-07

Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene	EPA 8010	ug/kg	2.9	ND	10/14/91	DCE
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signed

C McBride

## TEST DATA REPORT

Date 10/21/91  
 Page 1

## --- Project Information ---

Lab Number : 91-1072-08  
 Project No. : 53-1543  
 Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : B-3 2.0'-4.25'  
 Matrix : SO  
 Type : COMP  
 Collector : DWW

Sampled Date/Time : 10/08/91 12:20  
 Received Date/Time : 10/10/91 11:40  
 Received From/By : DWW/LD  
 Chain of Custody : 7267  
 Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Anal:

## -- INORGANIC CHEMISTRY RESULTS --

Moisture (Oven Dried @ 105C)	EPA 160.3M %	1	5.3	10/15/91	SC
------------------------------	--------------	---	-----	----------	----

## -- GC ORGANIC ANALYSIS RESULTS --

Chloromethane	EPA 8010	ug/kg	4.42	ND	10/15/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	10.1	ND	10/15/91	DCE
Chloroethane	EPA 8010	ug/kg	28.5	ND	10/15/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	17.5	ND	10/15/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	7.4	ND	10/15/91	DCE
Methylene Chloride	EPA 8010	ug/kg	13.8	ND	10/15/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	5.5	ND	10/15/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	3.86	ND	10/15/91	DCE
Chloroform	EPA 8010	ug/kg	2.76	ND	10/15/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	1.66	5.9	10/15/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	6.4	ND	10/15/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	1.66	ND	10/15/91	DCE
Trichloroethene	EPA 8010	ug/kg	6.4	ND	10/15/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	2.21	ND	10/15/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	5.5	ND	10/15/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	7.4	ND	10/15/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	18.9	ND	10/15/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	1.10	ND	10/15/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	1.66	ND	10/15/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	4.97	ND	10/15/91	DCE
Chlorobenzene	EPA 8010	ug/kg	13.8	ND	10/15/91	DCE
Bromoform	EPA 8010	ug/kg	11	ND	10/15/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	1.66	ND	10/15/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	11	ND	10/15/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	8.3	ND	10/15/91	DCE

Signed

*Chris Cummins*

TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-08

Project No. : 53-1543

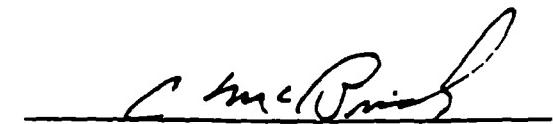
--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene                    EPA 8010    ug/kg    11                    ND                    10/15/91    DCE

Signed



## TEST DATA REPORT

Date 10/21/91

Page 1

## --- Project Information ---

Lab Number : 91-1072-09  
 Project No. : 53-1543  
 Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

## --- Sample Information ---

Station ID : B-4 4.0'-8.0'  
 Matrix : SO  
 Type : COMP  
 Collector : DWW

Sampled Date/Time : 10/08/91 13:18  
 Received Date/Time : 10/10/91 11:40  
 Received From/By : DWW/LD  
 Chain of Custody : 7267  
 Number of Containers : 1

Remarks :

## --- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal.
<b>-- INORGANIC CHEMISTRY RESULTS --</b>						
Moisture (Oven Dried @ 105C)	EPA 160.3M %	1	20	10/15/91	BC	
<b>-- GC ORGANIC ANALYSIS RESULTS --</b>						
Chloromethane	EPA 8010	ug/kg	1.15	ND	10/12/91	DCE
Vinyl Chloride	EPA 8010	ug/kg	2.6	78	10/12/91	DCE
Chloroethane	EPA 8010	ug/kg	7.4	ND	10/12/91	DCE
Trichlorofluoromethane	EPA 8010	ug/kg	4.6	ND	10/12/91	DCE
1,1-Dichloroethene	EPA 8010	ug/kg	1.9	ND	10/12/91	DCE
Methylene Chloride	EPA 8010	ug/kg	3.6	ND	10/12/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/kg	1.4	12	10/12/91	DCE
1,1-Dichloroethane	EPA 8010	ug/kg	1.01	ND	10/12/91	DCE
Chloroform	EPA 8010	ug/kg	0.72	ND	10/12/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
Carbon Tetrachloride	EPA 8010	ug/kg	1.7	ND	10/12/91	DCE
1,2-Dichloroethane	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
Trichloroethene	EPA 8010	ug/kg	1.7	ND	10/12/91	DCE
1,2-Dichloropropane	EPA 8010	ug/kg	0.58	ND	10/12/91	DCE
Bromodichloromethane	EPA 8010	ug/kg	1.4	ND	10/12/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/kg	1.9	ND	10/12/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/kg	4.9	ND	10/12/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/kg	0.29	ND	10/12/91	DCE
Tetrachloroethene	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
Dibromochloromethane	EPA 8010	ug/kg	1.30	ND	10/12/91	DCE
Chlorobenzene	EPA 8010	ug/kg	3.6	ND	10/12/91	DCE
Bromoform	EPA 8010	ug/kg	2.9	ND	10/12/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/kg	0.43	ND	10/12/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/kg	2.9	ND	10/12/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/kg	2.2	ND	10/12/91	DCE

Signed

*Chris Cummins*

TEST DATA REPORT

Date 10/21/91

2

Lab Number : 91-1072-09

Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene                    EPA 8010    ug/kg    2.9                    ND                    10/12/91    DCE

Signed



LAW ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91  
Page 1

--- Project Information ---

Lab Number : 91-1072-11  
Project No. : 53-1543  
Project Name : MODINE HEAT TRANSFER

Cust. No. :

Manager: CHRIS CUMMINS

--- Sample Information ---

Station ID : TRIP BLANK  
Matrix : W  
Type : GRAB  
Collector :

Sampled Date/Time : 10/05/91 :  
Received Date/Time : 10/10/91 11:40  
Received From/By : DWW/LD  
Chain of Custody : 7267  
Number of Containers : 4

Remarks :

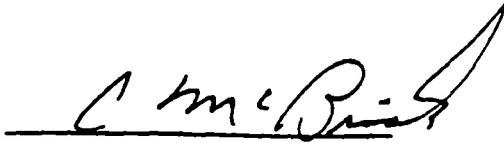
--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- GC ORGANIC ANALYSIS RESULTS --

Dichlorodifluoromethane	EPA 8010	ug/l	18	ND	10/10/91	DCE
Chloromethane	EPA 8010	ug/l	0.80	ND	10/10/91	DCE
Vinyl Chloride	EPA 8010	ug/l	1.8	ND	10/10/91	DCE
Bromomethane	EPA 8010	ug/l	12	ND	10/10/91	DCE
Chloroethane	EPA 8010	ug/l	5.2	ND	10/10/91	DCE
Trichlorofluoromethane	EPA 8010	ug/l	3.2	ND	10/10/91	DCE
1,1-Dichloroethene	EPA 8010	ug/l	1.3	ND	10/10/91	DCE
Methylene Chloride	EPA 8010	ug/l	2.5	ND	10/10/91	DCE
trans-1,2-Dichloroethene	EPA 8010	ug/l	1.0	ND	10/10/91	DCE
1,1-Dichloroethane	EPA 8010	ug/l	0.70	ND	10/10/91	DCE
Chloroform	EPA 8010	ug/l	0.50	ND	10/10/91	DCE
1,1,1-Trichloroethane	EPA 8010	ug/l	0.30	ND	10/10/91	DCE
Carbon Tetrachloride	EPA 8010	ug/l	1.2	ND	10/10/91	DCE
1,2-Dichloroethane	EPA 8010	ug/l	0.30	ND	10/10/91	DCE
Trichloroethene	EPA 8010	ug/l	1.2	ND	10/10/91	DCE
1,2-Dichloropropane	EPA 8010	ug/l	0.40	ND	10/10/91	DCE
Bromodichloromethane	EPA 8010	ug/l	1.0	ND	10/10/91	DCE
2-Chloroethylvinyl ether	EPA 8010	ug/l	1.3	ND	10/10/91	DCE
cis-1,3-Dichloropropene	EPA 8010	ug/l	3.4	ND	10/10/91	DCE
trans-1,3-Dichloropropene	EPA 8010	ug/l	3.4	ND	10/10/91	DCE
1,1,2-Trichloroethane	EPA 8010	ug/l	0.20	ND	10/10/91	DCE
Tetrachloroethene	EPA 8010	ug/l	0.30	ND	10/10/91	DCE
Dibromochloromethane	EPA 8010	ug/l	0.90	ND	10/10/91	DCE
Chlorobenzene	EPA 8010	ug/l	2.5	ND	10/10/91	DCE
Bromoform	EPA 8010	ug/l	2.0	ND	10/10/91	DCE
1,1,2,2-Tetrachloroethane	EPA 8010	ug/l	0.30	ND	10/10/91	DCE
1,3-Dichlorobenzene	EPA 8010	ug/l	2.0	ND	10/10/91	DCE
1,4-Dichlorobenzene	EPA 8010	ug/l	1.5	ND	10/10/91	DCE

Signed



LAW ENVIRONMENTAL NATIONAL LABORATORIES  
TEST DATA REPORT

Date 10/21/91

Page 2

Lab Number : 91-1072-11  
Project No. : 53-1543

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Analy

-- GC ORGANIC ANALYSIS RESULTS --

1,2-Dichlorobenzene	EPA 8010	ug/l	2.0	ND	10/10/91	DCE
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signed

C McBride

LAW ENVIRONMENTAL, INC.  
NATIONAL LABORATORY  
112 TOWNPARK DRIVE  
KENNESAW, GEORGIA 30144  
(404) 421-3400

# CHAIN OF CUSTODY RECORD

SAMPLING  
INFORMATION  
NPDES NUMBER

NAME OF FACILITY: MODINE HEAT TRANSFER, INC.  
STREET ADDRESS: P.O. Box 636, Sunset Drive, CAMDEN, Mo.

91-1072-01-12

LECT NAME ERS (SIGNATURE)		JOB NO.	TOTAL NO. OF CONTAINERS	CONTAINER TYPE												LENL LAB NO.				
IE	GRAB COMP.	SOURCE CODE	SAMPLE STATION DESCRIPTION		40 ml G.VOA HCl	1 L.G. AMBER	32 oz. G. WM	8 oz. G. WM	4 oz. G. WM	2 oz. G. WM	1 L. G(H)SO <sub>4</sub>	500 ml AMBER	1 L. PL (HNO <sub>3</sub> )	1 L. PL (H <sub>2</sub> SO <sub>4</sub> )	1 L. PL (NaOH+Ascorbic Acid)	1 L. PL (Zn Acetate + NaOH)	4 oz. PL WM	250 ml PL	1 L. TEFLON	
3pm	✓	So	HA-1 26-4.0'	1																91-1072-01
4pm	✓	So	HA-2 4.0'-4.3'	1																-02
5pm	✓	So	HA-3 0'-2.0'	1																-03
6pm	✓	So	HA-4 0'-0.75'	1																-04
7pm	✓	So	HA-5 0'-2.0'	1																-05
8pm	✓		HA-5-W	3	3															-10
9am	✓	So	B-1 2.0'-4.0'	1																-06
10am	✓	So	B-2 2.0'-4.3'	1																-07
11am	✓	So	B-3 2.0'-4.25'	1																-08
12pm	✓	So	B-4. 4.0'-8.0'	1																-09
			TRIP BLANK	2	2															-11
			FIELD BLANK*	2	2															-12
SHED BY			DATE / TIME	RECEIVED BY:		DATE / TIME	REI INQUIRIED BY:		RECEIVED BY LABORATORY:								DATE / TIME			
John Wright			10/16/91 3:30	(SIGNATURE)					(SIGNATURE)								10/16/91 11:00			

UTION: ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.  
PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

\* I used no trip blank for water sample so we took extra trip blank set for soil & pour thru into different vials & called this a field blank - treat this as you would a trip blank - this was done per C... N...wide

## 'SOURCE CODES

RECOVERY WELL - RW	NPDES DISCHARGE - ND
RCRA MONITORING WELL - MW	DRINKING WATER - DW
SOIL / SEDIMENT - SO	HAZARDOUS WASTE - HW
SLUDGE - SL	SURFACE WATER - SW
'ON-A-GO' WASTE	

**APPENDIX F**  
**WELL LOGS**

*Roddey*

## TECHNICAL SPECIFICATIONS

The information in this section is presented to further define and clarify the pump to be repaired during this project.

### WELL:

Year Drilled: 1961

Location: Lot 1, Block 21, Original Town, South Highway 5,  
Camdenton, Missouri

Diameter: 8 inch

Tape to Water: 254 feet

### PUMP:

Size: 6 SDH

Discharge Diameter: 6 inch Above

Column Diameter: 6 inch Screw

Shaft Diameter: 1-3/16 inch Carbon

Column setting to bowl: 420 feet

Bowl Diameter: 8 inch Shaft Diameter: 1-3/16 inch

Type RK HC Stages 18

### MOTOR:

Make : US

HP: 60

Speed: 1800

Volts: 220

Frame Size: A 404 UP Non-reverse: Yes

Running Amps: 120-120-120

Running Volts: 240-240-240

Serial No. : 3234247

# Layne-Western PUMP INSTALLATION

1. JOB NAME City of Comdentor  
 Address \_\_\_\_\_  
 City, State Comdentor, Mo.

2. DATE 1 6 78 Job Completed  
 Month Day Year

3. PUMP NO. 43863 Water Lube  
 Repair  
 Pump Trouble Maintenance & Repair

4. PUMP SIZE 6 SDH

	DIAMETER	LENGTHS
Discharge	<u>6"</u> Above Bowl	X
Column	<u>6"</u> Screw Mounting	<u>10' 6" 5'</u>
Tubing	—	
Shaft	<u>1 3/16"</u> <small>Bronze</small> Carbon	<u>10' 6" 5'</u>
Column setting to bowl	<u>420</u> ft.	
BOWL		
Diameter	<u>8"</u>	Shaft Diameter <u>1 3/16"</u>
Type	<u>RKHC</u>	Stages <u>18</u>
Cast Iron <small>or Bronze</small>		
Suction <u>None</u>	Diameter —	Ft. Long
Special Paint or Coating on:	Zinc Sleeves in:	
Column	—	
Tubing	—	

## 5. PUMP REPAIR

### CONDITION OF PUMP WHEN PULLED

Column OK

Tubing —

Shafting 21 pieces bad, Tip Sp. Bad,  
11 Couplings bad  
 Bowl Worn - .05" Clearance  
Between Imp. & Skirts.

Suction —

MACHINE WORK Machined Skirts  
to mate with New  
wear rings.

### 6. MOTOR OR GEAR DRIVE

Make U.S. HP 60  
 Speed 1800 Volts 220  
 Or Gear Drive Ratio — Standard Combination  
 Frame Size A 404 UP Non-Reverse-Yes   
 Running Amps. 120 - 120 - 120  
 Running Volts 240 - 240 - 240  
 Serial No. 3234247

### 7. WELL

No. 3 Year Drilled 1961  
 Location South  
 Diameter 8" Depth ?  
 Measured from top of 8" diameter casing which is  
2 ± feet above ground.  
 Tape to Water 254'  
 Air Line Length None A. L. Material —  
 Static Gage — Static Level —  
 Pumping Gage — Pumping Level —  
 Discharge Pressure — Feet when pumping into System

### 8. INSTALLER C. Shim

Rig Used Wichtex

Foreman Hours to Rig Up — To Pull —

Inspect — Repair — To Set —

### NEW PARTS INSTALLED

Column —

— 1 - Stuffing Box Bush

Shafting 1 - Top Special /  
21 - 1 3/16" X 10', 11 - Couplings  
 Bowl Complete Rebuild

Suction —

1. DRAIN PORTS OPEN
2. CHLORINATE WELL Yes
3. PUMP RUNS OK
4. ALIGN PUMP HEAD WITH DIAL INDICATOR  No
5. GROUTED HEAD-BASE PLATE Yes

**APPENDIX G**

**PHOTODOCUMENTATION**

**SITE NAME:** Modine Heat Transfer, Inc.



**PHOTOGRAPH NO. 1**

**Date:** 3/4/92  
**Time:** 1255  
**Photographer:** P. Kieler  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** Southwest

**Subject:** Hulett Lagoon - City of Camdenton  
**Location:** SWMU #1



**PHOTOGRAPH NO. 2**

**Date:** 3/4/92  
**Time:** 1258  
**Photographer:** P. Kieler  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** North

**Subject:** Hulett Lagoon - City of Camdenton  
**Location:** SWMU #1

**SITE NAME:** Modine Heat Transfer, Inc.



**PHOTOGRAPH NO. 3**

**Date:** 3/4/92  
**Time:** 1140  
**Photographer:** P. Kieler  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** N/A

**Subject:** Mudpit drainage sump  
**Location:** SWMU #2



**PHOTOGRAPH NO. 4**

**Date:** 3/4/92  
**Time:** 1440  
**Photographer:** S. Freeman  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** East

**Subject:** Pretreatment/Drum Storage Area  
**Location:** SWMU #3

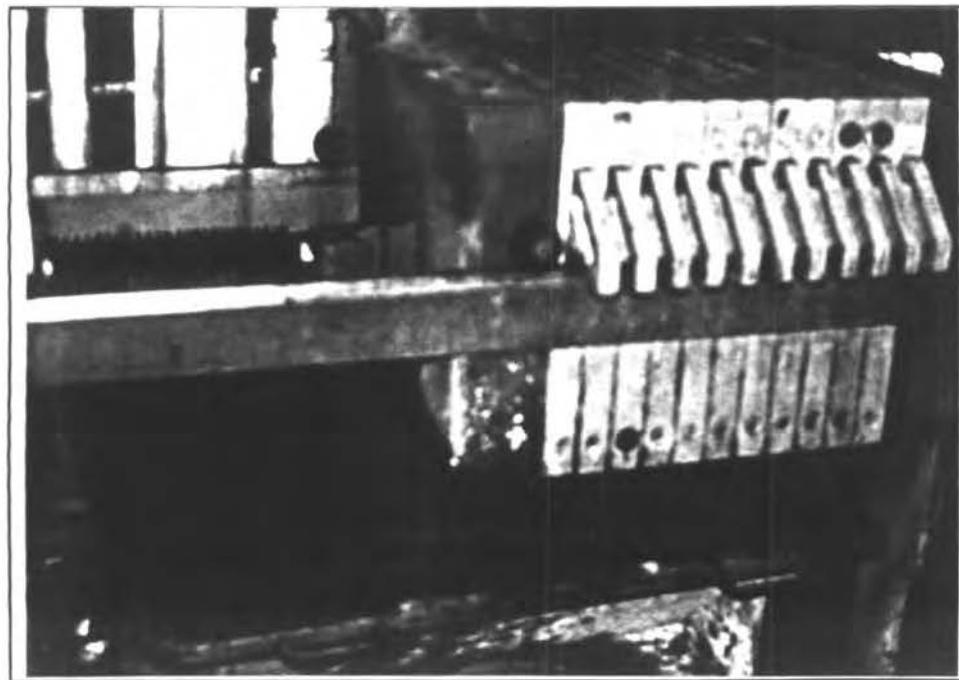
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 5

Date: 3/4/92  
Time: 1450  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: South

Subject: Pretreatment Wastewater System/Filter Press  
Location: SWMU #4



PHOTOGRAPH NO. 6

Date: 3/4/92  
Time: 1455  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Filter Press and Filter Press Tray  
Location: SWMU #4

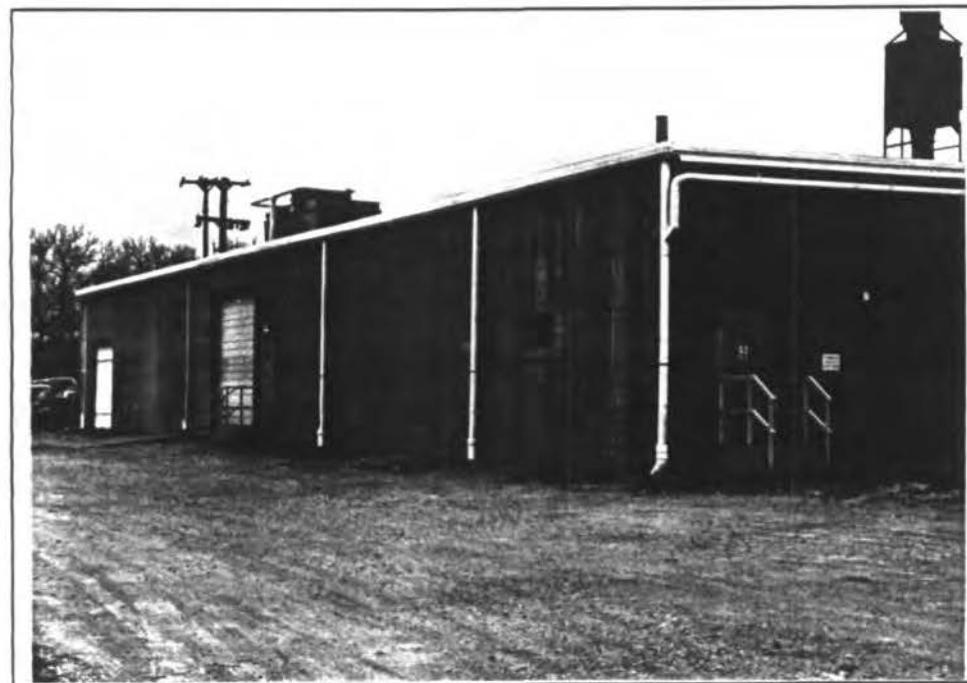
**SITE NAME:** Modine Heat Transfer, Inc.



**PHOTOGRAPH NO. 7**

**Date:** 3/4/92  
**Time:** 1525  
**Photographer:** S. Freeman  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** North

**Subject:** Drum Storage Area #1  
**Location:** SWMU #6

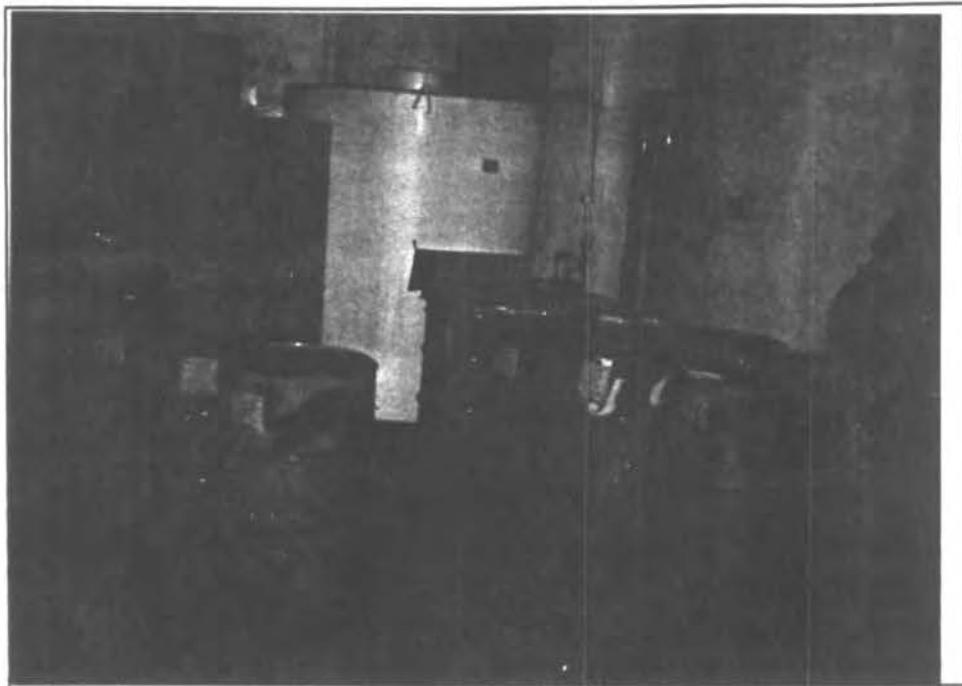


**PHOTOGRAPH NO. 8**

**Date:** 3/4/92  
**Time:** 1510  
**Photographer:** S. Freeman  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** North

**Subject:** Drum Storage Area # 2  
**Location:** SWMU #7

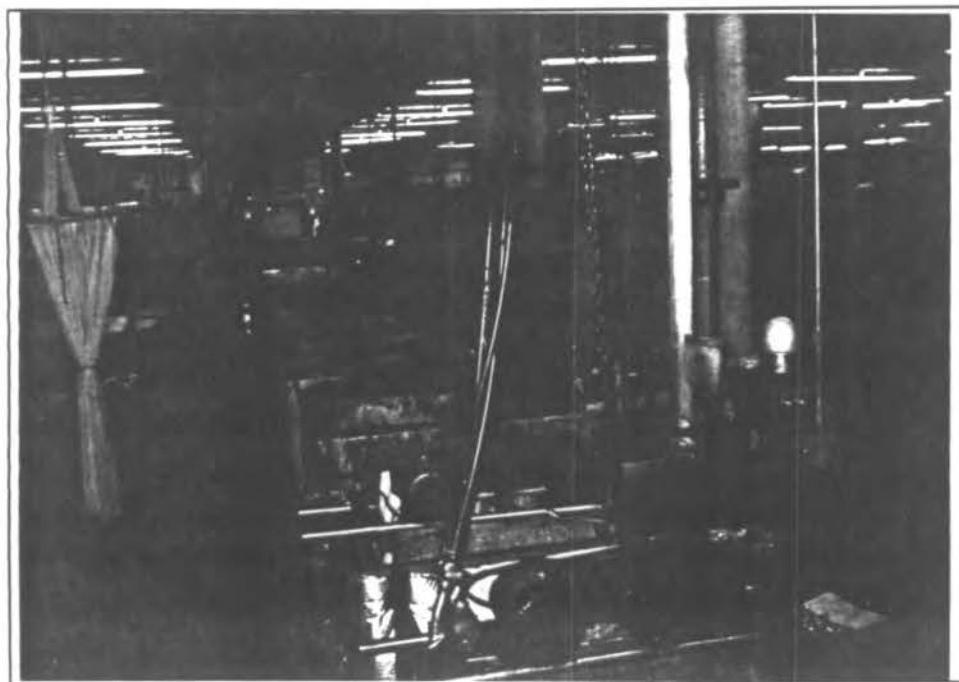
**SITE NAME:** Modine Heat Transfer, Inc.



**Subject:** TCA Waste Storage Tank #6  
**Location:** SWMU #9 - far right side

**PHOTOGRAPH NO. 9**

**Date:** 3/4/92  
**Time:** 1441  
**Photographer:** S. Freeman  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** Northeast

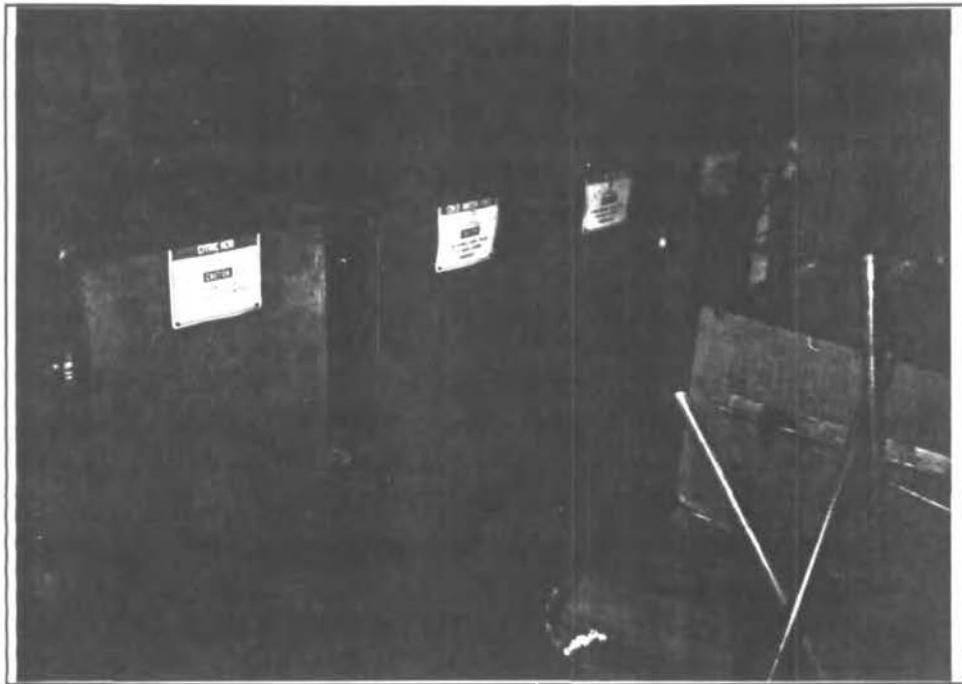


**Subject:** Copper Cleaning Line  
**Location:** SWMU #10

**PHOTOGRAPH NO. 10**

**Date:** 3/4/92  
**Time:** 1355  
**Photographer:** S. Freeman  
**Film:** ASA 400 Kodakcolor  
**Direction of**  
**Photograph:** Northeast

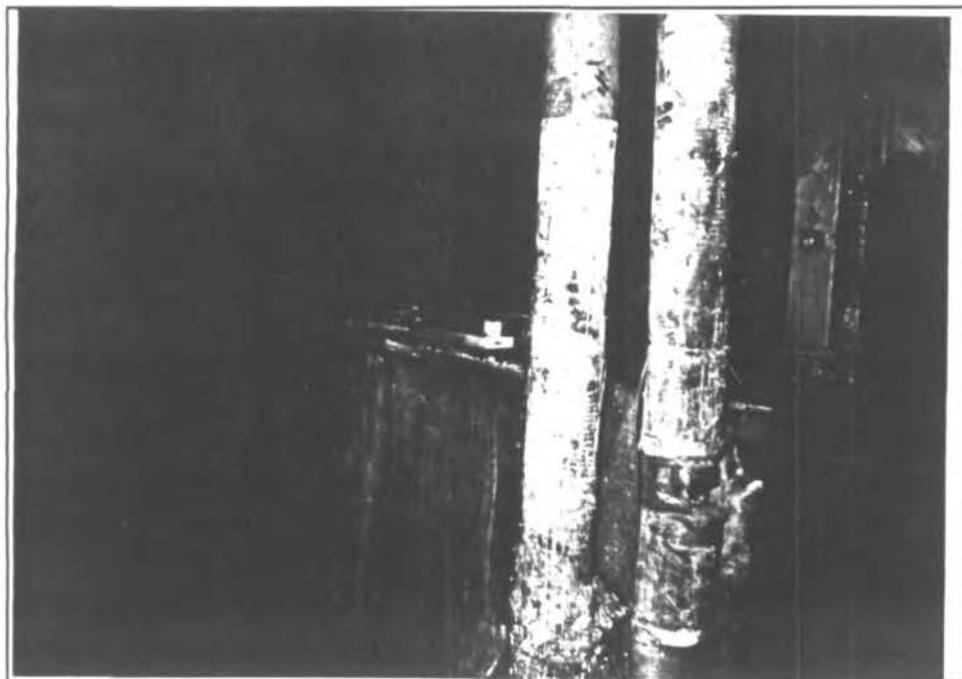
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 11

Date: 3/4/92  
Time: 1357  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: Southwest

Subject: Aluminum Cleaning Line  
Location: SWMU #11

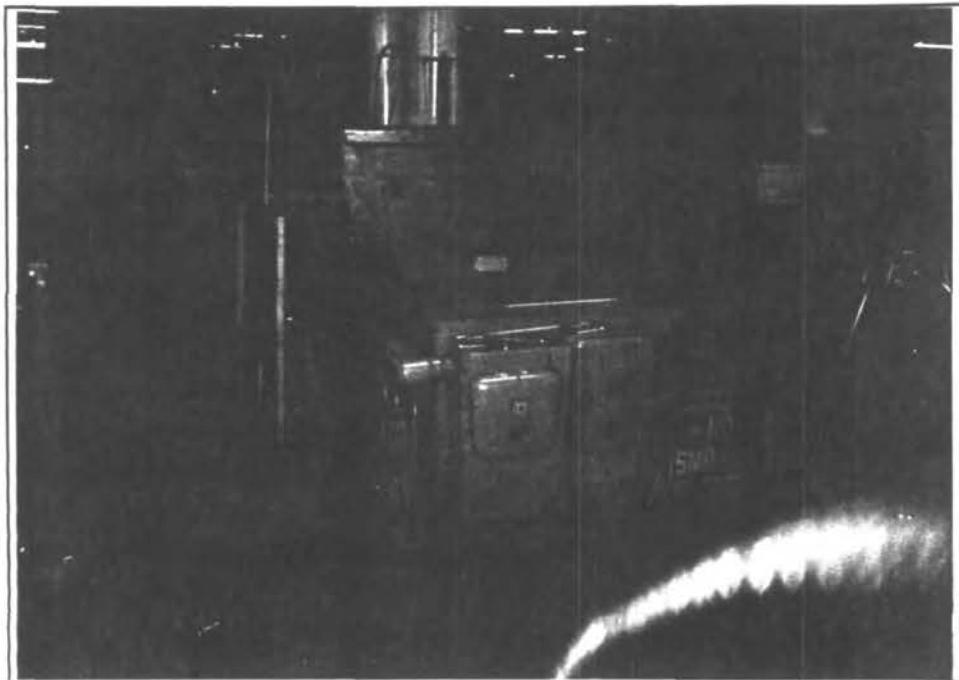


PHOTOGRAPH NO. 12

Date: 3/4/92  
Time: 1417  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Aqueous Cleaning Bath  
Location: SWMU #12

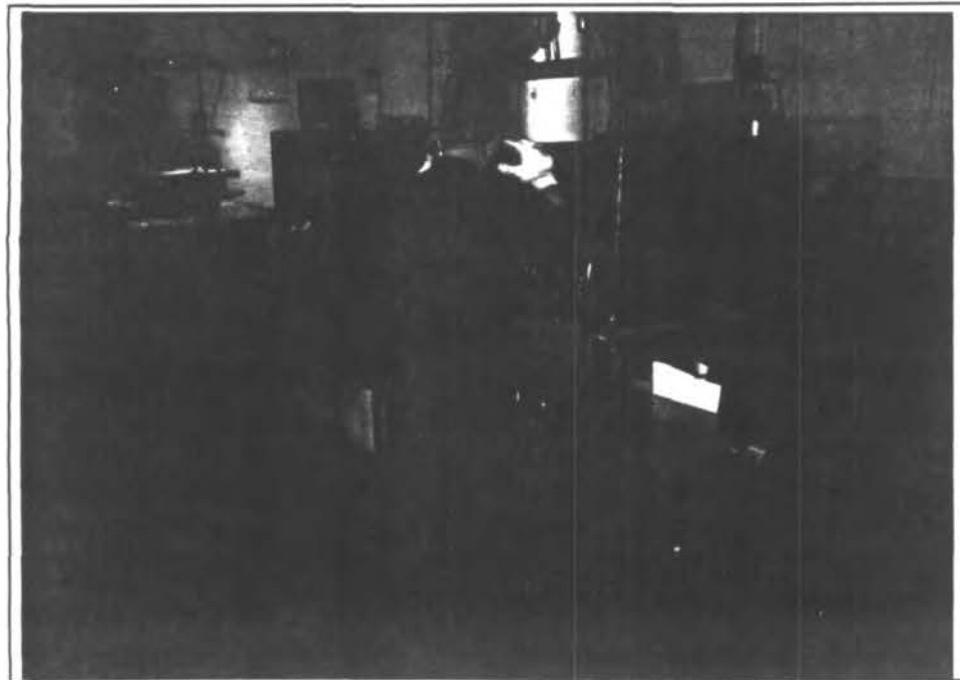
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 13

Date: 3/4/92  
Time: 1405  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Vapor Degreaser and Still M184  
Location: SWMU #13

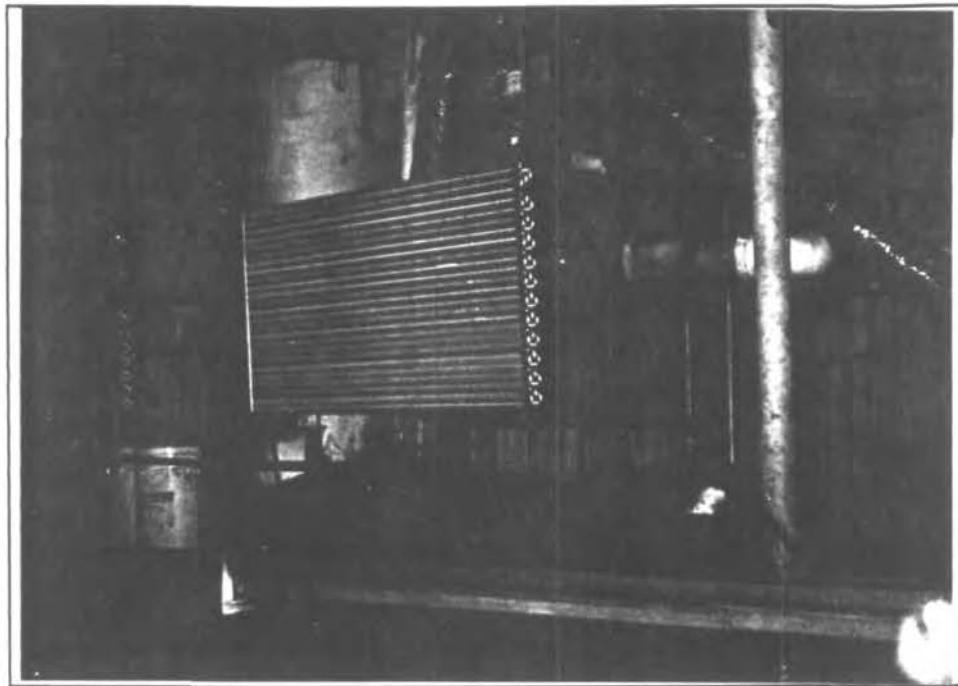


PHOTOGRAPH NO. 14

Date: 3/4/92  
Time: 1408  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Vapor Degreaser and Still M185 (new)  
Location: SWMU #15

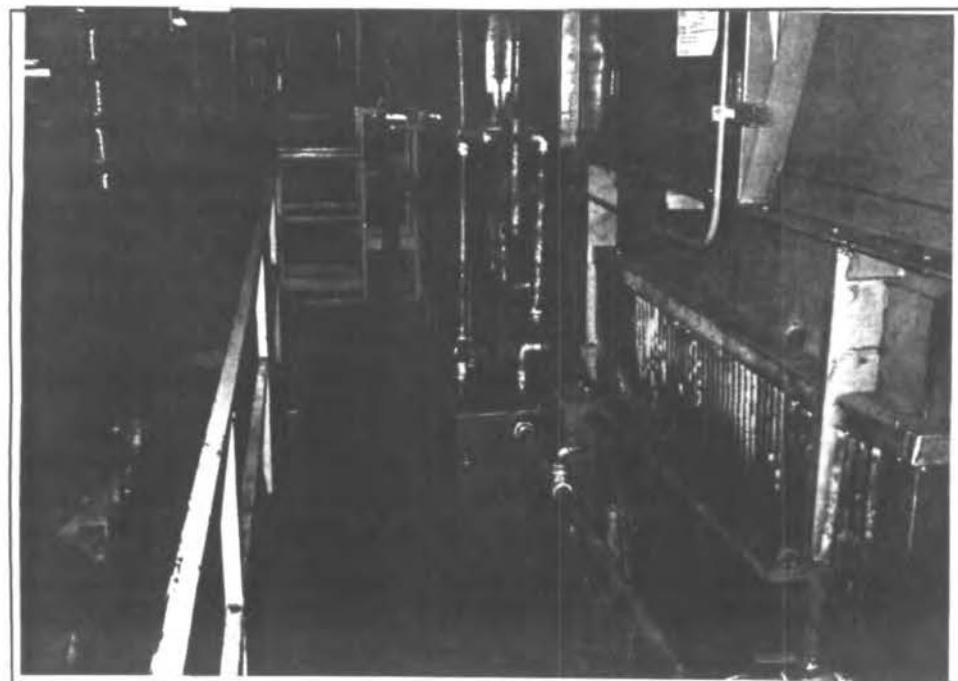
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 15

Date: 3/4/92  
Time: 1420  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Vapor Degreaser and Still M487  
Location: SWMU #16



PHOTOGRAPH NO. 16

Date: 3/4/92  
Time: 1430  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Vapor Degreaser and Still M587  
Location: SWMU #18

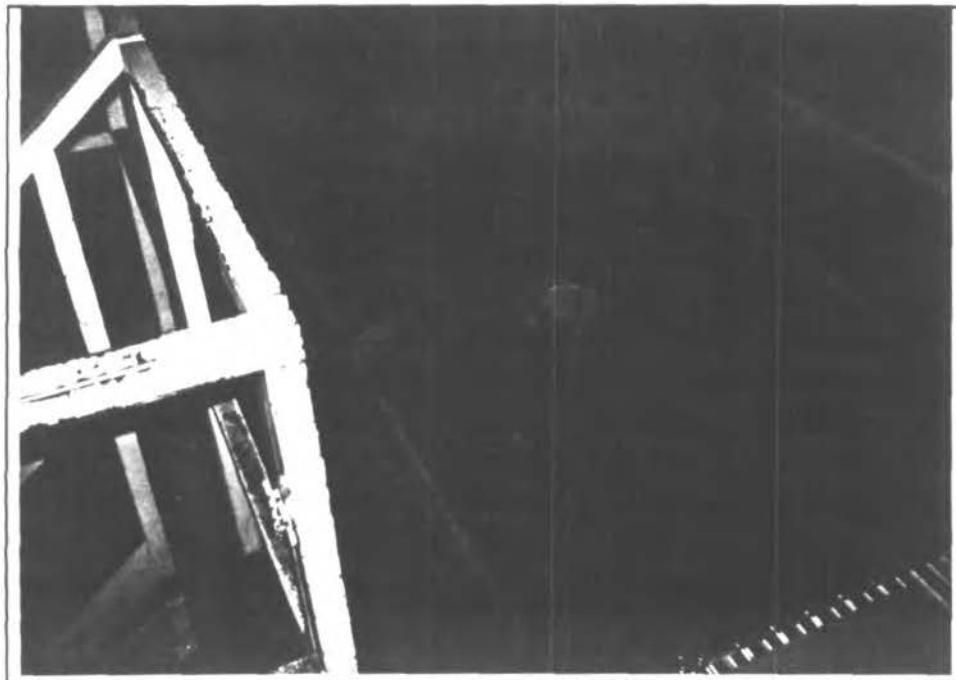
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 17

Date: 3/4/92  
Time: 1430  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Two 2,000-Gallon Storage Tanks  
Location: SWMU #20

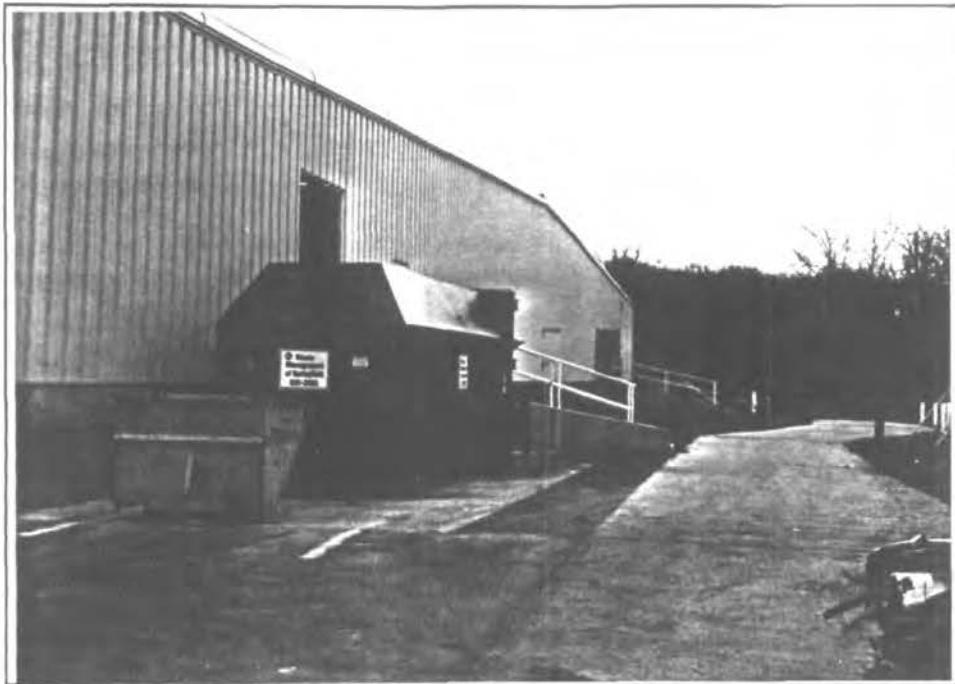


PHOTOGRAPH NO. 18

Date: 3/4/92  
Time: 1431  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Drum Storage Area #3  
Location: SWMU #21 - borehole location HA-3

**SITE NAME:** Modine Heat Transfer, Inc.



**PHOTOGRAPH NO. 19**

Date: 3/4/92  
Time: 1525  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: Northeast

**Subject:** Non-Hazardous Waste Receptacle  
**Location:** SWMU #22

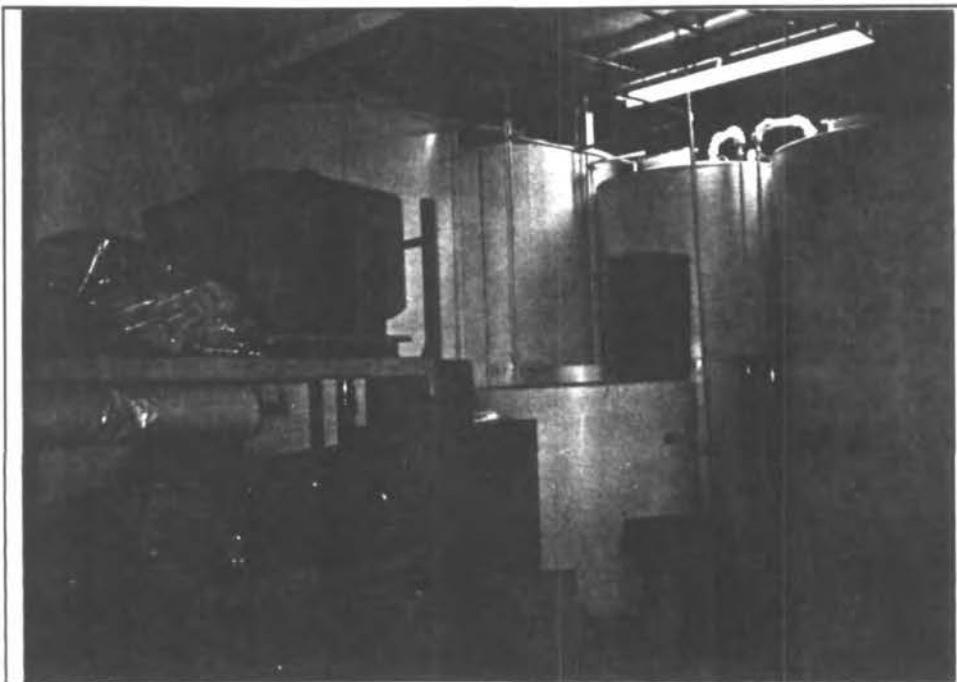


**PHOTOGRAPH NO. 20**

Date: 3/4/92  
Time: 1520  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: North

**Subject:** Scrap Metal Bins  
**Location:** SWMU #23 - between the truck and trailers

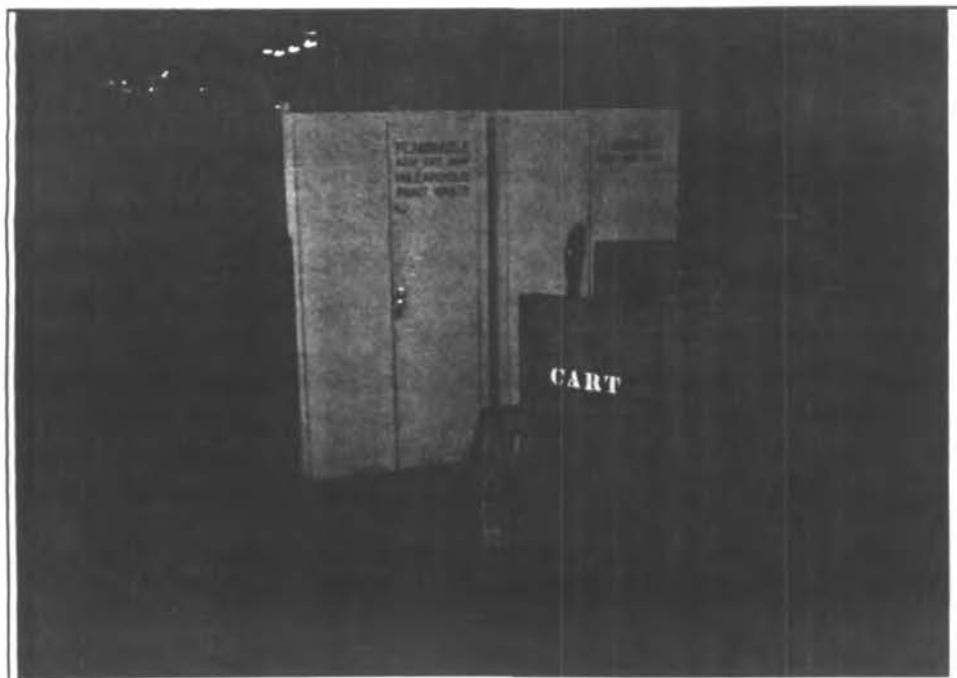
**SITE NAME:** Modine Heat Transfer, Inc.



**PHOTOGRAPH NO. 21**

Date: 3/4/92  
Time: 1440  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

**Subject:** AOC D, AOC A, AOC B, AOC C (left to right)  
**Location:** Pretreatment/Drum Storage Area



**PHOTOGRAPH NO. 22**

Date: 3/4/92  
Time: 1412  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

**Subject:** Tool Crib/Maintenance Area  
**Location:** AOC F

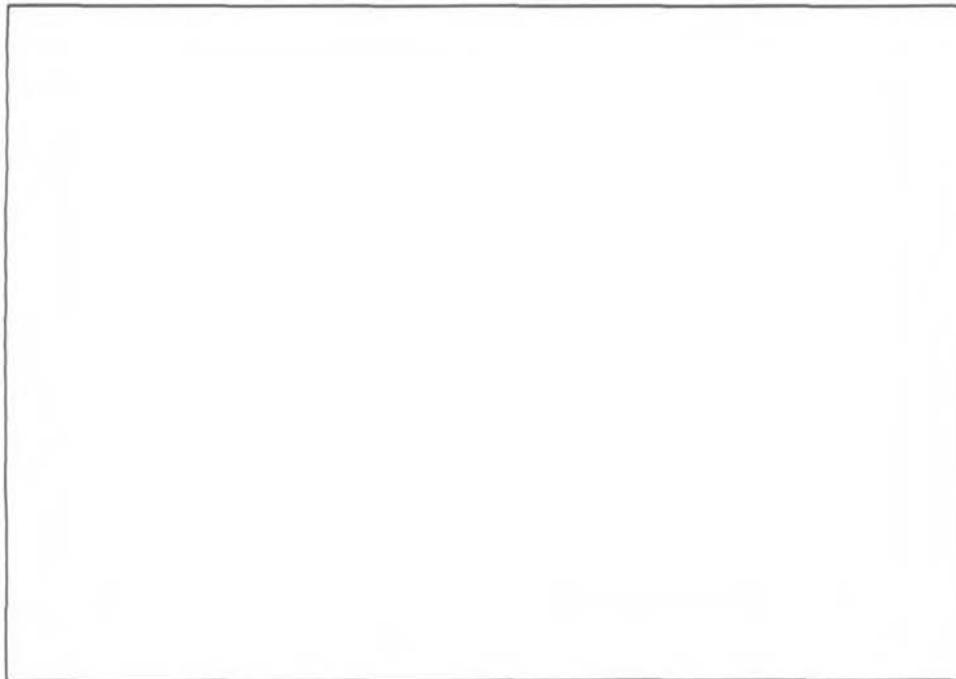
SITE NAME: Modine Heat Transfer, Inc.



PHOTOGRAPH NO. 23

Date: 3/4/92  
Time: 1432  
Photographer: S. Freeman  
Film: ASA 400 Kodakcolor  
Direction of  
Photograph: N/A

Subject: Paint Line  
Location: AOC G



**APPENDIX H**

**ANALYTICAL RESULTS OF HULETT LAGOON SLUDGE**

Dave

*Missouri Engineering Corporation*  
ENGINEERING CONSULTANTS  
P.O. BOX 13  
ROLLA, MISSOURI 65401 • PHONE: 314-364-4003

May 23 1988

May 20, 1988

Dave Freise  
Department of Natural Resources  
Water Pollution Control Program  
P. O. Box 176  
Jefferson City, MO 65102

RE: Camdenton Sunstrand  
IDG-011

Dear Dave:

Enclosed are two copies of the sludge analysis for total solids as needed to complete the sludge analysis for the above referenced project. If you have any questions, please contact our office.

Sincerely,

MISSOURI ENGINEERING CORP.

*Charles Ray*

Charles Ray  
CR/vm  
Enc.  
cc: Ken Arnold, DNR



# ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

19161 Lockland Road,  
St. Louis, Missouri 63146  
(314) 434-4260

CLIENT: Valda Mahoney  
Missouri Engineering  
Post Office Box 13  
Ponca, Missouri 65601

REPORT DATE: May 16, 1988  
SAMPLE ANALYZED: Ten samples analyzed for  
total solids.

PROJ. #: 3222-00353

DATE RECEIVED: March 7, 1988  
F.G. #:

SITE CODE	% Solid
Number 1	9.02
Number 2	9.04
Number 3	5.92
Number 4	15.78
Number 5	9.32
Number 6	9.81
Number 7	7.83
Number 8	25.09
Number 9	9.99
Number 10	13.89

See reverse side for "STANDARD CLAUSES".

Disk 27/jag

APPROVED:  
PAGE 1 OF 1

Lisa A. Leiby

## **APPENDIX I**

### **CORRESPONDENCE FROM MDNR TO MAYOR WEBSTER REGARDING HULETT LAGOON CLOSURE OPTIONS**



JOHN ASHCROFT  
Governor

FREDERICK A. BRUNNER  
Director

Division of Energy  
Division of Environmental Quality  
Division of Geology and Land Survey  
Division of Management Services  
Division of Parks, Recreation,  
and Historic Preservation

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176  
Jefferson City, MO 65102

May 26, 1988

The Honorable Mac Webster  
Mayor of Camdenton  
112 Court Circle, P.O. Box 1048  
Camdenton, MO 65020

Re: IDG - 011 Camdenton, MO  
Lagoon Closure

Dear Mayor Webster:

This letter is to explain what options are available for the City to pursue in order to completely abandon and close the Huelett or Factory Lagoon. We have reviewed the sludge sample analysis which your engineer sent to us on April 25, 1988 and May 20, 1988. The first step before you assess each option is to determine the percent moisture and the sludge depth at each sample site and to use the information to calculate the total weight of each of the various metals.

There are several options available to the City which are briefly explained below.

Option 1

Dispose of the sludge on site, at the lagoon. This option will require the preparation of a solid waste disposal area permit application complete with plans and specifications. The Waste Management Program would then review the application to determine if it could issue the permit. A point of contact for additional information and the time requirements of this option would be Mr. Tom Gredell at 751-3176.

Option 2

Haul sludge to a permitted, sanitary landfill. This would require a Special Waste Disposal Request. The sludge must also have no "free liquid" in order to be properly handled. A copy of the special waste disposal request form is enclosed. Tom Gredell would be your contact person as in option #1.

Option 3

Surface application in accordance with the Missouri Sludge Guide, "Agricultural Use of Municipal Wastewater Sludge" (Table 4).

The Honorable Mac Webster  
May 26, 1988  
Page 2

This would require the preparation and approval of a sludge management plan. The plan would limit the rate at which sludge could be applied. The rate would be based upon limiting the weight of metals to be applied to allow the unrestricted use of the land in the future. You should contact Ken Arnold at 751-6624 for additional information.

Option 4

Sub-surface application at the maximum one time rate. This would require either injecting the liquid sludge with chisel plows under the soil surface, or spreading the sludge, discing and then plowing the field. The rate of application would be higher than in option #3, but could not exceed the maximum cumulative site loadings per the Sludge Guide. This option would require the site to be City owned and the site would be restricted for use as a sludge disposal site in the future. Ken Arnold would be your contact person as in option #3.

Please note that whatever option is used, the lagoon must not discharge to the creek unless the City receives a new operating permit. The lagoon currently doesn't have a discharge permit. Preferably, any discharge would be to the City's sewer and be tested for compliance with the City's pretreatment ordinances before being introduced to the sewer.

We suggest you work closely with your engineer to quickly resolve the fate of the sludge disposal and lagoon abandonment. Please note the grant cannot be closed and final reimbursement made until this work is complete. If you should have any questions, please do not hesitate to call me at 751-6619.

Sincerely,

WATER POLLUTION CONTROL PROGRAM

*David Freise*

David Freise, P.E.  
Project Engineer

DF/pa

cc: Jefferson City Regional Office  
Missouri Engineering Corporation

**APPENDIX J**

**CLOSURE PLAN ANALYTICAL RESULTS**

**EPM Enterprises, Inc.**  
**DBA Environmental**  
**Projects**

October 30, 1990

4470 N. Highway 763 Columbia, Missouri 65202 (314) 875-0049

Mr. Don Mans  
Sundstrand Tubular Products  
P.O. Box 636  
Camdenton, MO 65020

**Re: Results of Storage Facility Closure**

Dear Mr. Mans:

Attached please find the test results of the samples collected during my review of the closure at your facility on October 17, 1990. There are three samples which analyses were performed on, with I.D. No. 1208 taken from the rinsate container and I.D. No's 1209 and 1210 being the two wipes taken from the bottom of the 1000 gallon steel storage tank used to store your F001 waste in the past. You may remember that two additional wipes were taken from the floor of the facility; however, based upon the results from the wipes taken in the storage tank, the volatile nature of the organics in question and the results of the rinsate which came off the floor we felt analysis of those wipes would be of no value.

Looking at the results of the Rinsate Sample, all of the parameters analyzed were well below the EPA target levels with the exception of cadmium which reported out at 1.02 ppm. The regulatory threshold for cadmium is 1 ppm utilizing the EP Toxicity Extraction Procedure or the TCLP Extraction Procedure; however, these limits apply to landfilled waste and not to a liquid such as this which will be discharged to a municipal treatment plant. In this case you should check your discharge permit and see what the allowable levels are for the metals called out in the report. If your discharge permit does not address these metals (in particular cadmium) you should contact your local officials and inquire as to the allowable limits on these parameters. Both the 111 TCE and the Trichloroethylene came out at roughly 10 ppb (our detection limit) which is well below any regulatory levels for these parameters I am aware of.

Wipe #1 and #2 which were taken from the bottom of the storage tank also came out below our detection limit for samples of this type (.03 ppm for 111 TCE and .01 ppm for Trichloroethylene). Wipe #1 was taken from a 1 square foot area near the end of the tank which faces the ramp leading up into the warehouse, wipe #2 was also a 1 square foot wipe taken from the opposite end of the tank. Wipe #1 was taken from a section of the tank which was completely dry so polished water was used to wet the gauze before the wipe was taken, Wipe #2 was taken from an area which was damp

page 2  
Mr. Don Mans

and so no polished water was necessary.

The visual inspection indicated that the storage area was clean in that no visible contamination of any type was apparent. I believe the results of the samples analyzed as noted above (especially the Rinsate) do as well indicate no apparent residual contamination at levels which should pose a threat to human health or the environment.

Should you have any questions on any of the above, please feel free to contact me at your convenience.

Sincerely,

  
Kirby Kassen, P.E.  
Project Manager

**REPORT OF ANALYSIS**

TO: Environmental Projects  
4470 North Hwy. 763  
Columbia, MO 65202  
Attn: Kirby Kassen  
Reference: Sunstrand Tubular

Date Received: 10-18-90  
Date Reported: 10-30-90  
Report #1237  
P.O. # none

<u>EPL I.D./Sample I.D.</u>	<u>Parameter</u>	<u>Results/Units</u>	<u>Method</u>
1208/Rinseate Sample	Arsenic, Total	3.2 ug/L	SM 303E
	Barium, Total	1.66 mg/L	EPA 208.1
	Cadmium, Total	1.02 mg/L	EPA 213.1
	Chromium, Total	1.25 mg/L	EPA 218.1
	Lead, Total	0.70 mg/L	EPA 239.1
	Mercury, Total	8.5 ug/L	EPA 245.1
	Selenium, Total	< 0.20 ug/L	SM 303E
	Silver, Total	< 0.01 mg/L	EPA 272.1
	1,1,1-Trichloroethane	12.0 ug/L	EPA 601
	Trichloroethylene	< 10.0 ug/L	EPA 601
1209/Wipe #1	1,1,1-Trichloroethane	< 0.03 ug/g	EPA 601
	Trichloroethylene	< 0.01 ug/g	EPA 601
1210/Wipe #2	1,1,1-Trichloroethane	< 0.03 ug/g	EPA 601
	Trichloroethylene	< 0.01 ug/g	EPA 601

October 30, 1990



Gene Banks  
Laboratory Director

**APPENDIX K**

**PRESENT WASTE DISPOSAL METHOD**

**Table 1**  
**Waste Management Guide**  
**Modine Heat Transfer, Inc.**  
**Camdenton, MO**

**Page 1 of 2**

**18-Feb-92**

Item	Pretreatment Waste Solids	Waste 1-1-1 Trichloroethane	1-1-1 Trichloroethane Still Bottoms	Waste Oil
Is Waste Hazardous By EPA or State	Yes	Yes	Yes	No (Federal)/ Yes (MO)
Destination	CWM  4636 Adams Center Ft. Wayne, IN 46806	Safety Kleen  633 E. 138th St. Dolton, IL 60419	Safety Kleen  633 E. 138th St. Dolton, IL 60419	Liquid Reclaimers  P.O. Box 85  Oak Grove, MO 64075
Transporter	To be determined at time of shipment	To be determined at time of shipment	To be determined at time of shipment	Liquid Reclaimers  Oak Grove, MO
Type of Container	Drum	Drum	Drum	Drum
Labeling	Stencil	Pretreatment Waste Solids (Date of Generation)	Waste 1-1-1 Trichloroethane (Date of Generation)	1-1-1 Trichloroethane Still Bottoms (Date of Generation)
Hazardous Waste Label	Yes	Yes	Yes	No
DOT Label	ORM-E	ORM-A	ORM-A	None
Truck Placarding	None	None	None	None
Hazard Class	DOT EPA	ORM-E  F006	ORM-A  F001	ORM-A  F002
Proper DOT Shipping Name	RQ Hazardous Waste n.o.s. UN 9189 (F006) Metal Hydroxide Sludge	RQ Waste 1-1-1 Trichloroethane ORM-A UN 2831 (F001)	RQ Waste 1-1-1 Trichloroethane ORM-A UN 2831 (F002)	Petroleum Oil Combustible Liquid NA 1270
UN/NA Number	UN 9189	UN 2831	UN 2831	None
EPA Waste I.D. Number	F006	F001	F002	D098 (MO)
Shipping Manifest Type	Generic Hazardous	Generic Hazardous	Generic Hazardous	State (Missouri)
Bill of Lading Hazardous Materials	None	None	None	None
90 - Day Storage Rule	Yes	Yes	Yes	No
CERCLA/SARA RQ	10 lbs.	1000 lbs.	1000 lbs.	None
Emergency Response Guide Number	31	74	74	None

Is Waste Hazardous By EPA or State	Yes		
Destination	CWM 4305 Adams Center Rd Fort Wayne, IN 46806		
Transporter	CWM Adams Center		
Type of Container	55 gal Drum		
Labeling	Stencil	Waste Paint Liquid (Date of Generation)	
Hazardous Waste Label		Flammable	
DOT Label		Flammable	
Truck Placarding		Flammable	
Hazard Class	DOT	Flammable	
	EPA	F003	
Proper DOT Shipping Name	RQ Flammable Liquid n.o.s. Flammable Material UN 1993 (F003) contains Xylene		
UN/NA Number	UN 1993		
EPA Waste I.D. Number	F003		
Shipping Manifest Type	Generic Hazardous		
Bill of Lading Hazardous Materials	None		
90 - Day Storage Rule	Yes		
CERCLA/SARA RQ	100 lbs.		
Emergency Response Guide Number	27		

\* Approval needed from Corporate Environmental Engineering Department



DEPARTMENT OF NATURAL RESOURCES  
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

FILE: Camdenton Sludge Disposal Area

DATE: 6-20-17

TELEPHONE:

Incoming   
Outgoing

CONFERENCE:

Field   
Office

SUBJECT: Citizen concerns regarding TCE contamination in Camdenton Area

PERSONS INVOLVED:

Keith Brown  
Valerie Wilder  
Carolyn Burns 573-346-1272

REPRESENTING:

MoDNR, HWP, Superfund  
MoDNR, HWP, Superfund  
Self/concerned citizens

SUMMARY OF CONVERSATION:

Mrs. Burns was contacted by phone to discuss her concerns about additional sites in the Camdenton area that may have TCE contamination. She had previously left a message with EPA Region 7 regarding concerns about TCE contamination and potential buried drum disposal in Camdenton.

Mrs. Burns reported that she had worked for Dawson/Sundstrand for 38 years and was a longtime resident in the Camdenton community. While working at Dawson/Sundstrand she had been exposed to TCE in her eye. Mrs. Burns stated that she is currently in remission from cancer and has had heart related problems including a heart attack, and is concerned that others in the community may be exposed to TCE and have adverse health impacts. She had several health related questions about her TCE exposure and possible links to cancer. Mrs. Burns stated that her husband (who also worked at Dawson/Sundstrand) recently died from cancer and many others in the community have been diagnosed with cancer. We stated that Missouri Department of Health and Senior Services (MDHSS) would be best equipped to answer health related questions regarding TCE exposure.

Mrs. Burns stated that Mr. Dawson stored TCE mixed with waste oil in 55 gallon drums at the Sunset Dr. facility and that she had heard that he had buried multiple drums of TCE on site sometime around 1973. Valerie Wilder asked if she had personally seen Mr. Dawson burying the drums and she said "No, but several people have told me that it happened."

Dawson Metal Products Camdenton Facility #2  
Camdenton, Missouri  
Pre-CERCLA Screening  
MoDNR, 2017A

Mrs. Burns then stated that after a fire in 1972 at the original Dawson Metal Products building on Sunset Drive, operations were temporarily moved to the "old Cox building" on Highway 54, which is now the site of Laker Fishing Tackle. Mrs. Burns reported that she had heard that TCE was also "dumped out a back door" during operations at the Old Cox building on Highway 54, which was reported to have been only about one year. When asked by Valerie Wilder whether she witnessed dumping of TCE at the Old Cox building Mrs. Burns said "No, but a lot of people saw it." Mrs. Burns confided that many of the people who saw the dumping occur may have passed away.

Mrs. Burns then discussed the removal of sewage sludge from Hulett Lagoon and deposition at the Camdenton Airport. She stated that her husband had worked for Mr. Tidgren who had put Hulett Lagoon sludge on his field. When pressed for an exact location of this field, Mrs. Burns relayed that the property was near the intersection of Panoramic Drive and Ha Ha Tonka Road, near the sewage treatment plant "by a big old barn". She stated that this location was used as a temporary storage area for the sludge before disposal at the Airport, but that some sludge may have been permanently deposited there as well. Mrs. Burns also stated that Hulett Lagoon sludge also may have been deposited on Larry Coleman's property. Mrs. Burns stated that Larry Coleman had worked for the city at the time, but has since retired. When asked what was done with the Hulett Lagoon sludge at Mr. Coleman's property Mrs. Burns said that it was applied to fields.

ACTION TAKEN:

DNR referred Ms. Burns health related questions to Dennis Wambuguh and Michelle Hartman at MDHSS.

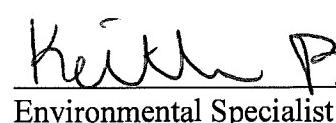
The Department will follow up on the remaining information regarding TCE in the environment.



Superfund Site Assessment Unit Chief



Date of Signature

  
Environmental Specialist

Date of Signature



DEPARTMENT OF NATURAL RESOURCES  
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

FILE: Dawson Metal Products Camdenton Facility #2

DATE: July 21, 2017

TELEPHONE:

Incoming   
Outgoing

CONFERENCE:

Field   
Office

SUBJECT: Former Dawson/Sundstrand/Modine Employee's Concerns

PERSONS INVOLVED:

Amanda Branson  
Valerie Wilder  
Travis Lyon  
Keith Brown  
Jerry Rogers

REPRESENTING:

MoDNR, HWP, Superfund  
MoDNR, HWP, Superfund  
MoDNR, HWP, Superfund  
MoDNR, HWP, Superfund  
Former Dawson/Sundstrand/Modine Employee

SUMMARY OF CONVERSATION:

The phone call started off with staff informing Mr. Rogers the department is beginning a few new investigations regarding Modine's operations at the Cox site after the fire in 1972 at the Sunset Dr. location. Staff explained that Mr. Roger's Facebook post was the reason for the call and it appeared that Mr. Rogers could give the department valuable information. Mr. Rogers stated "I sure hope so" and explained that he worked for the company when it was moved to the 1225 W. US Highway 54, (Cox Building) location where it operated for approximately one year. Operations at the Cox facility began about a week after the fire at the Sunset Dr. location. The fire occurred on a Friday night in 1972 and cleanup of the facility began the following Monday. Upper management did not provide PPE to employees during clean-up after the fire, only rubber gloves. Any equipment covered in oil collected a layer of black soot which had to be cleaned. Mr. Rogers also mentioned that some machines were covered with a blue dust he suspected was caused by the chemicals used during factory operations. The blue dusting occurred well before the fire took place. During the night of the fire, Mr. Rogers worked second shift, the first break he got was at 5. Mr. Rogers worked in room 2 and walked through room 1 on his break to go outside. Room 1 is where the degreaser is located and is where the fire began. A garage door separated the two rooms which was open at five because Mr. Rogers walked through room one to take his first break, by 11 the door had been closed causing Mr. Rogers to walk around the building to take his second break. The door had been closed due to a chemical reaction with the degreaser which probably caused the fire. The fire began shortly after and the building was evacuated. Workers hung-out outside for a short period before leaving when they were told to by emergency responders. Dawson, the owner, could not be reached after the fire.

Staff asked Mr. Rogers if he helped move equipment to the Cox location. Mr. Rogers replied that he did in fact help move equipment. He then explained the conditions at the Cox building. The

new location was not set up for the factory operations. There was no evaporator or ventilation system set up and no disposal area for wastes generated by the degreasing process (TCE was used for degreasing). For ventilation, workers would open back and side doors. The back door was used for shipping and the side door was used for receiving. Cleaning tools and products was done at the receiving door where there was no collection system in place for wastes. To clean/degrease, they used 55 gallon drums which were cut in half and filled with TCE. One 1/2 drum was used for the initial dunking to remove larger chunks of grease and debris then the next drum would be used to clean remaining grease off. Once the first drum was too dirty, it would be dumped directly into the environment and then filled with fresh TCE and used as the final rinse station making the previous final rinse station the initial station. The drums rotated this way for the year while located at the Cox facility. TCE was dumped right outside the back shipping door during the year at the Cox facility. One ½ 55 gallon drum would not last through a shift and sometimes multiple ½ drums were dumped each day. No one kept records. When they were located at the Sunset location there was a supervisor on each shift but he never saw any supervisor while located at the Cox facility.

Mr. Rogers stated he was involved in the dumping. At the time they didn't know better and there was no leadership. And the managers said the TCE was safe enough to drink (if it wasn't so hot). The building was run off oil and TCE. Coffee cans filled with TCE sat near every machine for cleaning tools or whatever needed to be cleaned. Workers would treat chiggers and poison ivy by rubbing TCE directly on their skin. Employee arms would turn white after working in the TCE all day. Many days employees would have open cuts and sores. Lesions would randomly appear on workers who worked with TCE.

Mr. Rogers explained that he posted on Facebook because a small group of workers worked at the facility when all this took place. Many have passed away and others are in bad health. Mr. Rogers wanted to get this out so more people would step forward and tell their story about what happened before there is no one left to tell.

Department staff asked if he would walk us through the facility and show us where everything took place if we get permission to access. Mr. Rogers explained that he would. He said that he believes the area of dumping is under concrete now from new additions to the building. He said his wife worked there for four years while it was the "fishing shack" and his daughter currently lives near the Hulett lagoon on Mulberry Street. Staff explained that the department plans to do more sampling around the lagoon as well.

Mr. Rogers then explained that the reason the workers never said anything at the time is because if the factory got shut down they would lose their jobs. It wasn't until later that he found out TCE was a carcinogen and caused other health issues as well; when an employee who was formerly in the Navy explained the health risk of TCE (in the navy they would use TCE to clean gun turrets and had to wear hazmat suits while cleaning in confined spaces). Mr. Rogers said the former Navy service member didn't stay long but what he said always bothered Mr. Rogers. Mr. Roger said he saw what he saw and other employees saw what they saw, he hoped we would get other viewpoints to fit the story together like a jigsaw puzzle.

Staff asked if he knew Jerry Palmer to which Mr. Rogers said he did. Mr. Palmer worked the

degreaser just on the other side of the garage door from where Mr. Rogers worked. Mr. Palmer was one of the employees who had to clean the degreaser. Cleaning the degreaser needed to be done regularly or metal chips would collect and start a chemical reaction and the building would have to be evacuated.

Staff asked when the TCE was dumped directly into the environment, would it sink directly into the ground. Mr. Rogers stated it depended on the weather conditions. Sometimes it would soak into the ground right away and sometimes it would run down the hill. He said if it was dry it would be more likely to run down the hill.

Staff asked if the soil where the TCE was dumped was stained. Mr. Rogers stated he didn't recall but at the time he and other workers didn't even think anything of it. It wasn't until the Navy guy explained to him that TCE was bad that he started being concerned, and that was later. They would play pranks on new employees which involved telling them to get a Styrofoam cup and bring some "Triclor" but before the new employee would get far the cup would already be melted. Managers repeatedly told employees that TCE posed no health risks and was safe enough to drink. Mr. Rogers explained that an awful lot of TCE was dumped at the Sunset location as well. Waste from an overflow tub from degreasing would be dumped after a shift. The tub was 2'X3'X1.5'. Staff asked which place dumped more and Mr. Rogers said the Sunset plant did over the course he worked there only because there was more opportunity (time) to pollute at that site.

Staff asked if there are any drums buried at the original site. Mr. Rogers stated that he couldn't recall but he didn't see everything that took place at the facility. Mr. Rogers stated the atmosphere at the facility improved sometime after these events; he wasn't really sure about the early days though.

After speaking with Mr. Rogers for a while it became clear that Mr. Rogers was concerned about his and his coworkers' health as a result of working with the TCE. Department staff explained to Mr. Rogers that if he had health concerns that we could get him in touch with Missouri Department of Health and Senior Services staff. Mr. Rogers stated he has had lesions show up on his body in the past, he gets chronic migraines, and currently many other health problems. He admitted that all his health problems probably aren't a result of working with TCE but he suspects some are. A doctor told him that the lesions Mr. Rogers got were worse than what he has seen in Vietnam veterans.

Staff asked Mr. Rogers if he had any suggestions of any other employees that were relocated to the Cox facility that would be able to provide more information. Mr. Rogers stated that if we could find out who the maintenance crew was at the time they'd be a good group to question since they conducted the riskiest tasks such as literally getting inside the degreaser to work on it (without PPE). Mr. Rogers stated that the crew has a high mortality rate. He gave the name, Mr. Dale Bland who worked on the maintenance crew; who has made complaints in the past. Mr. James McGuire who was a quality guy who conducted daily sampling of the holding area and daily blowdown tests for degreaser would also be a good contact. Charles Van Cleave, an on post supervisor in later years, was apparently there for an acid cloud event that required the evacuation of the facility.

Mr. Rogers said that the plant at the Sunset Drive facility went through at least 30,000 gallons of water each day and wasn't sure if the pre-treatment waste water plant was designed to handle that much flow. He believed there was some kind of deal between the city and the company. He just didn't understand how the city didn't notice all the chemicals going into their waste water treatment facility. Mr. Rogers stated that at the time water usage at the facility was more than the rest of the city users combined.

Staff asked Mr. Rogers if he ever met Mr. Dickerson, owner of the Cox facility. Mr. Rogers said he didn't believe a Mr. Dickerson owned the facility at the time. He said the company definitely moved there and described its location to confirm that we were talking about the same location (across from the juvenile justice center etc.).

Staff asked how many employees worked at the Lakers facility. Mr. Rogers said about 30 to 40 (four lines and three Freon booths which had a makeshift ventilation system of cutting a whole in the wall). Staff informed Mr. Rogers that new info regarding this site will be posted online and viewable by the public under Dawson Metal Product Facility #2.

Mr. Rogers said that the locals in Camdenton think the department allowed this pollution to take place so he figured the department would want to clean it up to clear the department's name. Finally, staff asked Mr. Rogers if chromium was ever used at the facility. Mr. Rogers stated that they did all of their own tooling, until corporate took over tooling, so chromium was used at the original facility (but not at the Cox building). He stated nitric acid was used as well.

ACTION TAKEN:

<u>Keith Brown</u> <u>True Lipp</u> Environmental Specialist	7/21/17 7/21/2017
<u>Amanda Branson</u>	Date of Signature 7/21/17



DEPARTMENT OF NATURAL RESOURCES  
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

FILE: Dawson Metal Products Camdenton Facility #2

DATE: August 3, 2017

TELEPHONE:

Incoming   
Outgoing

CONFERENCE:

Field   
Office

SUBJECT: Former Dawson/Sundstrand/Modine Employee's Concerns

PERSONS INVOLVED:

Amanda Branson  
James McGuire

REPRESENTING:

MoDNR, HWP, Superfund  
Former Dawson/Sundstrand/Modine Employee

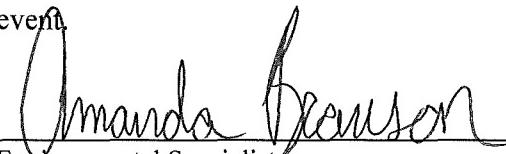
SUMMARY OF CONVERSATION:

Valerie left Mr. McGuire a voicemail explaining that we were calling him after being referred to as a former employee at the Dawson/Sundstrand Facility. She requested that he return our call as convenient to him. Mr. McGuire returned the call after hours and stated that he did in fact work for Dawson, Sundstrand, and Modine. He requested that Amanda return his call.

A follow up call was placed on 08/07/2017 by Amanda Branson and Keith Brown, MoDNR. Mr. Palmer was unavailable at the time so a voicemail was left and Amanda left her contact information and asked that James leaves a voicemail letting staff know a better time to contact him if he happens to call after hours. James returned the call to Amanda later in the afternoon; her and Keith sat down and talked with James.

James confirmed with staff that he did in fact work for Dawson, Modine, and Sundstrand. He remembers the night of the fire and does remember relocating to the Cox facility. He worked at the Cox facility as a Freon inspector until they were able to relocate back to the Sunset Drive facility somewhere between 6-12 months. When asked if he could describe the process at the Cox facility James said that a 55 gallon barrel would be cut in half, both halves being filled with TCE. They would use 1 drum as a 1<sup>st</sup> rinse station and the 2<sup>nd</sup> drum as the 2<sup>nd</sup> rinse station. They would use these drums in a rotation. Once the 1<sup>st</sup> rinse station because too dirty to use they would wheel it outside and dump the barrel. In the meantime they would move the 2<sup>nd</sup> rinse station drum to become the 1<sup>st</sup> rinse station. After dumping the original dump station they would bring that drum in and refill it with TCE and it became the 2<sup>nd</sup> rinse station. This occurred the entire time they were located at the Cox facility. James does not remember there being containers of TCE at the work stations because he did not use it being the Freon inspector. He said they knew what they were using because they had read the labels and even after refusing to use it they were forced to use it. He recalls a time where they brought in a temporary pit degreaser with no ventilation & he refused to do it, but was forced to do it anyway. He said he could attend a site visit if needed.

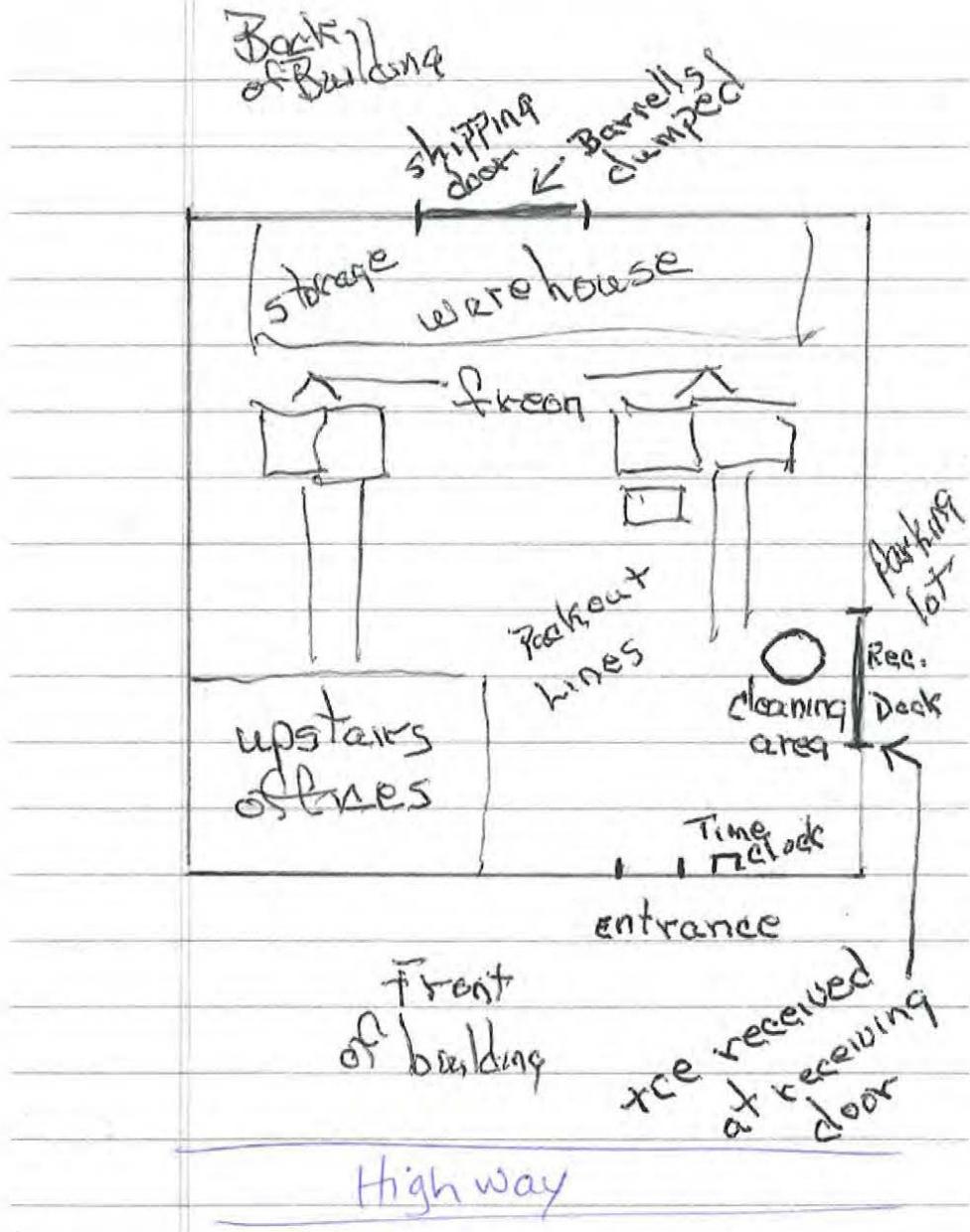
When asked if he knew any information about sludge from Hulett Lagoon being disposed in other locations other than the airport, James said he honestly didn't know any information about Hulett Lagoon other than that it was cleaned out. He asked if MoDNR knew about the 30,000 gallon reservoir spill at the Sunset Drive location, Amanda responded that she had not heard about that but our RCRA section would contact him for more information pertaining to this event.

  
Amanda Benson  
Environmental Specialist

8/3/17  
Date of Signature



Dawson Metal Products Camdenton Facility #2  
Camdenton, Missouri  
Pre-CERCLA Screening  
MoDNR, 2017D





Dawson Metal Products Camdenton Facility #2  
Camdenton, Missouri  
Pre-CERCLA Screening  
MoDNR, 2017E

